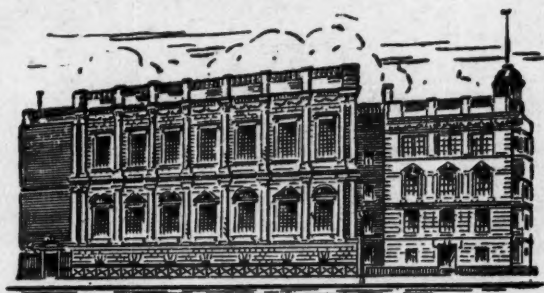


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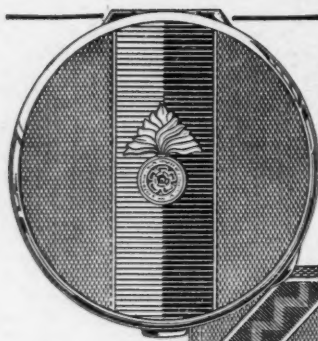
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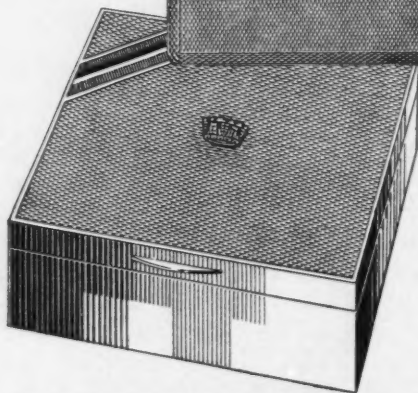


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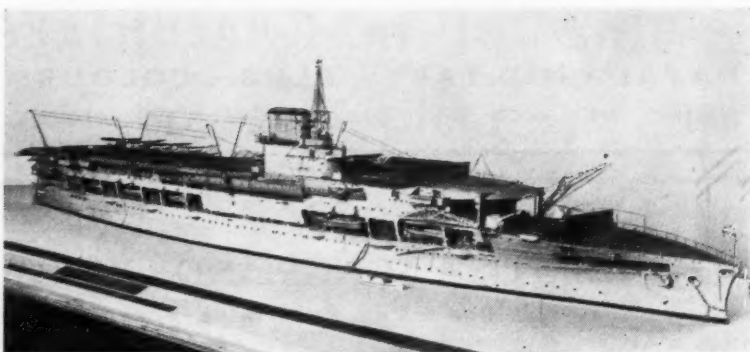
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Lieutenant A. Tennant-Wilson, R.N.V.R.
F. B. Dutton, late Surgeon Lieutenant, R.N.
Captain G. W. Ross, R.M.
Lieutenant-Commander A. H. Thorold, R.N.
Commander Sir P. W. Bowyer-Smyth, Bt., R.N.

ARMY

Captain G. I. Malcolm, Argyll and Sutherland Highlanders.
2nd Lieutenant H. W. Holt, The West Yorkshire Regiment.
2nd Lieutenant F. G. Lennox-Boyd, Royal Scots Greys.
Brigadier-General E. L. Spears.
Colonel W. R. Meredith, D.S.O., Commandant, Nigeria Regiment.
2nd Lieutenant M. H. McL. Dynes, The Leicester Regiment (S.R.).

2nd Lieutenant W. E. Williams, R.A. (S.R.).
 Captain Kalwant Singh, 2/1st Punjab Regiment, I.A.
 Lieutenant S. O. Murphy, The Devonshire Regiment.
 Lieutenant R. W. Goodbody, Royal Horse Artillery.
 Major C. C. Spooner, D.S.O., The Essex Regiment.
 Captain R. J. Walker, R.E.
 Captain D. W. B. T. Hogg, The Royal Berkshire Regiment.
 Captain L. G. Man, 2/9th Jat Regiment, I.A.
 Lieutenant G. S. F. Middleton, The East Surrey Regiment.
 Lieutenant G. E. Thubron, The North Staffs Regiment.
 Captain J. F. Ashton, The Border Regiment.
 Colonel W. A. Stone, M.C., T.D., H.A.C. (Infy.), R. of O.
 Captain G. R. Pouncey, 14th Punjab Regiment, I.A.
 2nd Lieutenant H. H. Brodie Ind, Scots Guards.
 Captain V. G. Toler-Aylward, The Queen's Bays.
 Lieut.-Colonel A. S. M. Porter, R.A.S.C. (ret.).
 Lieutenant R. N. Seddon, Royal Signals.
 Lieut.-Colonel H. Norris, I.A. (ret.).
 Lieutenant J. E. Cairnes, Royal Tank Corps.
 2nd Lieutenant M. A. Bell, H.L.I.
 Lieutenant J. M. Smyth, The Norfolk Regiment.
 Brigadier-General E. I. de S. Thorpe, C.M.G., D.S.O., late Beds and Herts Regiment.
 2nd Lieutenant A. G. E. Hepworth, The King's Regiment.
 Lieutenant W. M. T. Magan, 12th F.F., I.A.
 Lieutenant H. R. Mackeson, Royal Scots Greys.
 Lieutenant J. R. B. Knox, West Yorkshire Regiment.
 Lieut.-Colonel F. H. N. Davidson, D.S.O., M.C.
 Lieutenant H. C. Kingsford-Lethbridge, Royal Fusiliers.
 Lieutenant A. B. Cree, N. Rhodesia Regiment.
 Major A. Fortescue, I.A.S.C.
 Captain J. W. Hope, The South Wales Borderers.
 Captain W. J. Murphy, The Border Regiment.
 Brigadier B. W. Shuttleworth, C.B., I.A. (ret.).

ROYAL AIR FORCE

Flying Officer E. J. Corbally, R.A.F.
 Flying Officer G. W. Montagu, R.A.F.
 Flight Lieutenant J. W. Colquhoun, R.A.F.
 *Flight Lieutenant G. L. Worthington, R.A.F.
 *Flight Lieutenant P. J. R. King, R.A.F.
 *Wing Commander A. W. F. Glenny, M.C., D.F.C., R.A.F.
 *Flight Lieutenant J. R. H. Pott, R.A.F.
 *Squadron Leader R. V. Goddard, R.A.F.
 †Air Commodore J. A. Chamier, C.B., C.M.G., D.S.O., O.B.E.

* These officers joined in December, 1933.

† This officer joined in January, 1934.

Members Joining in October

The attention of potential Members is invited to the fact that if they join on or after 1st October of the current year, they are not called upon for any further subscription until January, 1936.

Special Facilities for Junior Officers

Members are requested to call the attention of Junior Officers to the special facilities which now exist for them to join the Institution:—

Commissioned Officers of the Home, Dominion, Indian and Colonial fighting Services and their Reserves, of three years or less seniority as such; Midshipmen, R.N., R.N.R. and R.N.V.R.; and Naval, Military and Air Force Cadets, are admitted to Membership without Entrance Fee on payment of the first annual subscription of £1 5s.

Gold Medal Essay (Naval), 1934

The following essays have been received:—

"For every why he had a wherefore."

"Secundis Dubiisque Rectus."

"Build me straight, oh worthy Master."

"By wise counsel thou shalt make thy war."

"Credo quia impossibile est."

"Festina lente."

Gold Medal Essay (Air), 1935

The following subject has been selected:—

"Discuss the effect of the development of air power on British interests in the Mediterranean, and suggest how these interests should be protected."

A leaflet with the Rules governing this Competition is enclosed in this Journal. Further copies can be obtained on application to the Secretary.

LIBRARY**Facilities for Borrowing Books**

The special attention of Members who are paying the comprehensive annual subscription of £1 5s. od., is invited to the fact that they are thereby entitled to the full privileges of the Lending Library without further charge. These include the right to have sent to them not more than four volumes at a time on loan, the Members paying postage both ways.

Old Members who have not wished to conform to the new arrangement and who are still paying the original subscription of £1 1s. od., must pay an additional subscription of 10/- per annum in order to belong to the Lending Library.

All Members are, of course, free to use the Library when they visit the Institution.

Rules Governing Return of Books

The attention of Members is invited to the following Regulations governing the retention and return of books:

- (1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.
- (2) In the United Kingdom.—Books must normally be returned within one month of the date of issue; but the Librarian is authorized to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.
- (3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that "the date of receipt" is substituted for "the date of issue."

N.B.—IN VIEW OF THE INCREASING DEMAND FOR BOOKS FROM THE LENDING LIBRARY, IT IS ESSENTIAL IN THEIR OWN INTERESTS THAT MEMBERS SHOULD ADHERE STRICTLY TO THE RULES GOVERNING THE RETURN OF BOOKS. FAILURE TO DO SO IS CAUSING MUCH INCONVENIENCE, AND INVOLVING THE INSTITUTION IN UNNECESSARY EXPENSE AND CLERICAL LABOUR.

Periodicals on Sale

The following periodicals for 1934 will be sold to the highest bidder:—"The Aeronautical Journal," "The Aeroplane," "Airways," "Blackwood's Magazine," "The Blue Peter," "Flight," "The Journal of the Royal Geographical Society," "Punch," "The Saturday Review," "The Spectator," "The Scientific American." Offers should be addressed to the Librarian before 15th January, 1935. Copies will be despatched as they are withdrawn from the Reading Room.

MUSEUM

Special Exhibition

The Special Exhibition of Aircraft Models depicting aviation from the earliest times to the present day is being retained during the Christmas holidays.

Naval Badges and Crests

It is desired to develop the Institution's collection of Naval Badges and Crests and gifts of these of boat and note-paper sizes respectively will be greatly appreciated.

Additions

- (8730) Copper bolt from H.M.S. "Foudroyant."—Given by W. Worthington.
- (8731) Sword of the late Colonel A. W. J. Montgomerie, 20th Hussars; pattern, 1829-1853.—Given by D. Montgomerie.
- (8732) Sword surrendered to A. Morris, of H.M.S. "Nymph," by the Second Captain of the French frigate "La Cleopatre," 17th June, 1793.—Given by the Rev. M. C. F. Morris.
- (8733) Ship's badge of H.M.S. "Hood."—Given by the Commanding Officer.
- (8734) Model of a Boulton and Paul Mark IV Sidstrand aircraft.—Given by Messrs. Boulton and Paul.
- (8735) Photograph of "The Grand Naval Review of English Ships at Spithead, 1867."—Given by A. Butler.

- (8736) Portrait of Cornet Alexander McInnes, 2nd Life Guards.
- (8737) Coloured print of the uniforms of the 5th Dragoon Guards, 1825.—Given by F. White.
- (8738) Photograph of the last Lucknow Dinner, 1897.—Given by the surviving children of Major-General G. W. C. Plowden.
- (8739) Set of twenty-nine enlargements of aerial photographs.—Given by "Flight."
- (8740) Infantry officer's sword, Bombay Fusiliers.—Given by Mrs. D. V. Thomson.
- (8741) Collection of badges of the South Middlesex Rifle Volunteers.—Given by the Rev. G. Hawkes Field.
- (8742) Shako badge of the 7th Bombay Regiment, 1850.—Given by Miss E. O. Parr.
- (8743) Double-barrelled rifle, used as the pattern for the weapon with which Jacob's Rifles were armed.—Given by Field-Marshal Sir Claud Jacob, G.C.B., G.C.S.I., K.C.M.G.
- (8744) Lithograph of the Allied fleets in the Bosphorus, 1853.—Given by Rear-Admiral C. C. Curtis and family.
- (8745) Gilt ball from the ensign staff of H.M.S. "Immortalité."—Given by Surgeon Rear-Admiral T. Jeans.
- (8746) Gangway ropes from H.M.S. "Hercules" used on the occasion of the visit of the Duke of Cambridge in 1884.—Given by Lieutenant G. E. W. Bayley, R.N.V.R.
- (8747) Pouch box of the 15th Hussars, worn up to 1914.—Given by H.R.H. the Princess Royal.
- (8748) Piece of copper from the rudder of the "Bounty."—Given by H. J. Chapman.
- (8749) 8-lb. round shot found embedded in the wall of a house in Bermuda.—Given by Mrs. Davis.

LOANS.

- (3606) Shako of the 14th Light Dragoons, 1830.—Lent by N. Thornhill.
- (3607) Model of a 56-ft. Admiralty pinnacle.—Made and lent by A. R. Isard.

Attendance

The amount taken for admission during the past quarter was :—

£238 12s. od. in August.
 £167 19s. 6d. in September.
 £114 6s. 6d. in October.

Purchase Fund

This fund has been opened to assist in the purchase of new exhibits. The Council hope it will receive the support of members interested in the Museum.

OLD MILITARY UNIFORMS AND COLOURS

The Council of the Royal United Service Institution, in consultation with the Council of the Society for Army Historical Research, have decided that it is desirable to compile a summary of information on old Military Uniforms, Equipment, Standards and Colours of the British Army, with a notation as to where such information can be found.

It is proposed that this project shall be carried out mainly by voluntary effort, but it must necessarily involve a certain amount of clerical work, card indexes, and postage, the cost of which is estimated at about £50 per annum. This cannot be met from the normal funds of the Institution or of the Society.

It is hoped, therefore, to raise this sum by individual subscriptions from those interested in the subject.

Subscriptions, however small, will be gratefully acknowledged. Cheques and postal orders should be made payable to "R.U.S.I. Uniforms A/c.," crossed, and sent to the Secretary, Royal United Service Institution, Whitehall, London, S.W.1.

Contributions to the fund have been received from the following :—

Major S. S. Flower, O.B.E.

Captain H. M. J. McCance.

ROYAL WEDDING PROCESSION

All accommodation for Members and their friends to view the Procession on 29th November, 1934, from the Banqueting Hall has now been allocated, and there is a long waiting list.

Members can use the Reading and Writing Rooms on this occasion as usual, but only friends with tickets for the Banqueting Hall can be admitted to the building on that day until the Procession is over.



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ARTILLERY ADVANCING BEFORE HARBONNIERES

8th AUGUST, 1918

By H. SEPTIMUS POWER

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should be addressed to the Secretary, Royal United Service Institution.]

RECENT OPERATIONS IN MANCHUKUO

By CAPTAIN J. V. DAVIDSON-HOUSTON, Royal Engineers.

On Wednesday, 10th October, 1934.

FIELD-MARSHAL THE VISCOUNT ALLENBY, G.C.B., G.C.M.G., G.C.V.O.,
D.C.L., LL.D., in the Chair.

The Chairman introduced the Lecturer.

LECTURE

DURING the last three years a country as large as France and Germany together has been detached from the Chinese Empire and placed under the protection of Japan. In the military operations involved in that process, a small, modern army took the field against vastly more numerous but almost medieval forces, with the inevitable result. These operations, if treated in the conventional way, would therefore be of little value to the military student, and a mere jumble of weird names to the layman. So, in the hope of rendering this chapter of Far Eastern history more intelligible, if not more interesting, I propose to describe my personal observations and experiences during the Manchurian campaign.

THE COUNTRY.

To begin with, a brief description of the theatre of operations will not be out of place. The name "Manchuria" was given to the country by foreigners on account of its being the original home of the Manchus. The Chinese, however, who now form 90 per cent. of the population, refer to it as "The Three Eastern Provinces." When the Japanese

assisted Manchuria to independence, the name " Manchou Kuo " meaning " Manchu State " was adopted, to indicate its separation from the so-called Chinese Republic. It is an awkward word to pronounce, and there seems no reason why we should not continue to use the expression " Manchuria," which, after all, means the same thing.

Manchuria is bounded on the North by Siberia, on the South-East by the Japanese possession, Korea, on the South-West by China proper, and on the West by Mongolia ; it is thus well qualified to be called " the cockpit of Asia." The centre of the country consists for the most part of a vast plain, extensively cultivated during the summer but a frozen desert in the winter. It is here that the chief cities—Mukden, Harbin and Changchun, are situated. The regions near the frontier are more mountainous, but few of these ranges are very high or rugged, and do not present a barrier at all comparable with the Alps or the Hindu Kush. Some parts, however, are covered with dense forest through which no roads exist. The vast majority of the inhabitants are Chinese engaged in agriculture or commerce ; there is a considerable minority of Mongol tribes living a nomadic life on the western prairies, and a sprinkling of Manchus and Tunguses. During the last thirty-five years considerable railway development has taken place, but the communications of the country depend on two main arteries—the Chinese Eastern Railway, owned by Russia but likely to be bought by the State of Manchukuo, and the South Manchuria Railway, owned by Japan. The climate is one of extremes. In the summer temperatures of 80° to 100° F. are registered, while in the winter I have known the thermometer to drop to 40° below zero. At this period the rivers are frozen to a depth of several feet, and mechanical transport can move freely over the ground ; but during the thaw and the summer rains the country often becomes impassable even for horses. There are hardly any roads worthy of the name ; for this reason the Japanese confined their main operations to the winter months, although the low temperature favoured the Chinese.

THE OPERATIONS.

The causes of the invasion of Manchuria are not within the scope of this paper ; it is sufficient to state that the operations began on 18 September, 1931, when the Japanese suddenly seized Mukden, the capital of the country and the site of the Chinese arsenal. Thereafter their forces advanced methodically along the network of railways, and thus gradually brought the whole of Manchuria under their control. Organized resistance was crushed, and further operations consisted in " mopping up " irregulars and bandits in outlying districts. It must be realized that in 1931 the Japanese were by Treaty allowed to keep

troops in Manchuria for the protection of the South Manchuria Railway, a circumstance which made their task considerably easier.

Their occupation of the country can be broadly divided into three phases :—

- (1) The seizure of Mukden and the South.
- (2) The capture of Harbin and the North.
- (3) The occupation of Jehol.

About the seizure of Mukden I will say nothing further, but as I was fortunate enough to be with the Chinese Army at the Battle of Harbin and in Jehol, I will describe those operations in greater detail.

By the end of 1931 the Japanese army, having occupied Mukden, had overrun Southern Manchuria and driven all Chinese regular forces from that region. In the North, however, there remained the vast tract of country between Kirin and the Russian frontier, containing the Mongolian pastures of Barga, the Chinese Eastern Railway, and the important towns of Hailar, Tsitsihar and Harbin. The latter city was the headquarters of the Sino-Russian enterprise known as the Chinese Eastern Railway, and the meeting point for railroads running North, South, East and West. It appeared logical, therefore, that the invaders should turn their attention in this direction early the following year.

The city lies on the South bank of the Sungari River, in the midst of a wide, undulating plain. In summer this plain is covered by crops of beans and giant millet ; but at the time to which this narrative relates, it presented a bare, treeless expanse, devoid of any cover but frozen so hard as to permit the movement of troops in all directions. Harbin owes its existence to the Chinese Eastern Railway, and its character is mainly Russian, the inhabitants consisting of impoverished "whites," Soviet railway employees, immigrant Chinese, and Japanese. From the Central Station the northern line crosses the Sungari by a steel bridge some 800 yards long, and runs to Manchuli on the Siberian border ; South-West of the town, the line forks into two branches, one of which turns southward to Changchun and Mukden, and the other eastward to Vladivostok. From Machuankou, on the opposite bank of the river, a railway runs northward as far as Hailun—it is now connected with a branch from Tsitsihar. There are no modern roads leading to Harbin, and the river traffic is suspended in the winter months owing to the freezing of the Sungari to a depth of six or more feet. The neighbourhood of the city, in common with most parts of Manchuria, has long been a happy hunting-ground for bandits, and the Japanese invasion caused a boom in this industry, the brigand bands being swelled by defeated and disbanded Chinese soldiers.

The nearest Japanese forces were those at Changchun, the junction of the South Manchuria and Chinese Eastern railway systems, situated 150 miles to the southward. Owing to the necessity for maintaining considerable garrisons all along their extensive communications, the Japanese command had only a weak division of some 8,000 men available for field operations in the North. As the advent of the thaw in late February or March would render the country impassable for transport, it was necessary for them to prosecute operations without waiting for the complete "pacification" of South Manchuria. The Japanese troops were well equipped and clothed for a campaign in a zero temperature. Nothing heavier than divisional field artillery was required for dealing with the Chinese; although aircraft, tanks, and armoured cars were also available if needed.

In addition to these forces, General Honjo could count on the half-hearted co-operation of Hsi Ch'ia, a Manchu whom the Japanese Army had installed as Governor of Kirin; but the strength of his forces was always a doubtful quantity, since whole units frequently deserted with their arms, and they were a constant source of anxiety to their allies. In any case they were of little value, being indifferently armed and supported by little or no artillery. They were provided with Japanese staff officers, but the latter found it difficult to inspire their Chinese colleagues with staff college doctrines.

Harbin became the rallying point for all those forces still prepared to oppose the invader and the "running dogs" who had gone over to his side. The Chinese troops consisted of the regular garrison, under the joint command of Generals Ting Ch'ao and Li Tu, and a heterogeneous collection of irregulars, deserters and bandits, calling themselves "The Army for the Salvation of the Country." All these forces were untrained, ill-disciplined, and provided with few modern rifles or machine-guns; they had no aircraft or mechanized units; while their artillery consisted of weapons varying from modern 75 mm. field-guns to muzzle-loading 8-pounders. The total force thus available for the defence of Harbin amounted to about 20,000 men. A Gilbertian factor in the situation was the presence in the city throughout the hostilities of the Japanese Consulate and Special Military Mission, both of whom enjoyed quasi-diplomatic privileges, and were able to communicate by wireless with Japanese forces in the vicinity.

YU HSIEN CHOU'S ABORTIVE ATTACK.

I arrived in Harbin from Peking on 25th January, 1932, only just in time to witness the ensuing operations, for rail and telegraphic communications with the South were interrupted on the following day.

Japanese aeroplanes flew over the city and dropped leaflets printed in Russian and Chinese, assuring the inhabitants of the benefits of Japanese occupation and pointing out the evils of the former administration. Irregulars continued to pour into Harbin from the South-East, causing many of the inhabitants to bury their valuables and hoist Polish flags on their houses. This curious choice of nationality may have been due partly to the fact that the colours tallied with the red-and-white armlets of the irregulars, and partly to the ease with which the flag could be made up. These new accessions to the garrison were mostly mounted on shaggy Mongol ponies, and armed with every kind of weapon, including red-tasselled spears; they were preceded by standard-bearers, carrying three-cornered "dog tooth" flags inscribed with characters denoting Bravery and Patriotism. From these troops it was ascertained that they were being followed up by the Kirin Army, which was advancing upon Harbin from the South-East.

Early next morning a Japanese aeroplane arrived on its customary mission of dropping leaflets, and this time was subjected to ineffective rifle fire, without, however, inducing the aircraft to discharge anything more dangerous than paper. That night the Kirin troops, consisting of a mixed brigade under Yu Hsien Chou, halted at Ashiho, a small town twenty miles to the South-East. There were no signs of Japanese troop movements, and it was clear that General Honjo hoped to induce Harbin to surrender without having to attack it. If force were necessary, it was desirable that it should be applied by his Chinese allies rather than by his own (foreign) troops.

On the 27th, I was awakened by sounds of firing. I drove to the eastern suburbs of the city and took up my position upon the roof of a house, where I obtained an excellent view of the battlefield. The attackers numbered about 2,000 infantry, who advanced across the open plain at the walk, in a succession of extended and irregular lines. The advance was covered by the fire of 3-inch mortars, whose projectiles mostly burst harmlessly in the gardens of the suburbs. The Harbin troops standing among the houses replied with rifles and mortars. Nobody on either side troubled about taking cover and casualties were few. Every now and then, however, a wounded man could be seen, slung like a pig from a pole, being carried by "stretcher-bearers" from the field; while a soldier would take an occasional shot at a cowering civilian for the sheer fun of making him run.

The foremost line of the attack had approached to within 300 yards of the houses, and it seemed possible that the rare spectacle would be presented of two Chinese forces coming to grips. Suddenly, however, a tremendous volume of fire broke forth; the Kirin troops hesitated,

halted, turned round and began to walk away. At once the firing died down, and an exulting yell arose from the defenders. Banners were waved, bugles blown, and the Harbin troops started to form up in the open spaces. A regiment of cavalry, on their woolly little ponies, started out in pursuit, but came home again after nearly catching up the retiring enemy, much as a dog will run barking after a stranger who passes his house. As the "cavalry" were armed with nothing but carbines, it might have been interesting to have observed their methods of shock action. Yu's brigade retired to billets in some villages at the southern entrance to Harbin, and desultory sniping went on through the night. The action gave the impression of an XVIIIth century battle, where the whole field could be surveyed from a single observation post, and where the effective range of infantry weapons could not exceed 300 yards.

JAPANESE ACTIVITIES.

As soon as it was evident that their Kirin allies were but broken reeds, the Japanese began to take an active part. Late in the afternoon, two aeroplanes flew over the town and dropped a number of bombs; I was amused to see two Japanese civilians signalling to them, with ground strips, in a field close behind the defensive perimeter.

One of these machines came down with engine trouble on the frozen mud-flats West of the city, and was immediately surrounded by Chinese troops under the impression that they had shot it down. The pilot descended from the machine and calmly walked off to the nearest garage under the protection of his extra-territorial privileges, leaving the observer in charge of the aircraft. The Chinese soldiers, who numbered about a hundred, gradually grew bolder and approached the aeroplane with the intention, no doubt, of taking possession of it. This was too much for the gallant little observer, who opened fire in all directions with his machine gun. In the ensuing mêlée the Japanese officer was riddled with bullets and the troops dispersed, possibly in fear of vengeance from an unexpected quarter. The machine was full of propaganda leaflets, now soaked in blood, and carried two bombs under each plane, while two had already been released on either side. A large crowd of Russians and Chinese swarmed round the machine, and took no notice of repeated warnings that the bombs might easily explode. Just before sunset four motor-cars arrived on the scene and disgorged Colonel Dohihara, head of the Japanese Military Mission, with thirty armed volunteers in the black uniform assumed by able-bodied civilians of the Japanese community in time of emergency. The crowd fell back, and the volunteers formed a cordon round the aircraft. Petrol was poured over the machine, which was then set on fire, the

Japanese guard remaining until there was no possibility of extinguishing the blaze. Dohihara and his satellites withdrew, and the crowd surged forward again, heedless of warnings given by the more sophisticated. Realizing that this was no occasion for dallying, I quickly withdrew; but within a very few minutes a series of violent explosions was heard, and the sun went down on one of the most gruesome sights that could be seen, even in Manchuria.

On 28th January I was shown copies of two secret telegrams addressed to the Director of the Chinese Eastern Railway from Moscow. The first stated that the Japanese claim to transport troops on that railway would not be recognized, and that Soviet employees were to render no assistance in this respect. The second, timed a few hours later, instructed the railway authorities to render to the Japanese Army any assistance that they might require. Whatever might be the reasons for the sudden change of attitude, the fact remains that on this day several Japanese troop trains left Changchun for the North. On the same date the notorious "night life" of Harbin was temporarily suspended; desultory rifle fire could be heard on the outskirts of the town, and the deserted streets echoed to the clatter of mounted patrols.

On the 29th it was learned that the Japanese advance along the railway was being delayed by damage to the line, carried out by irregulars, who retired as soon as they had caused the enemy to halt and detrain. Ting Ch'ao gave out that he intended to resist the "Dwarf Slaves" to the death, but on the same day granted a two-hour interview to the Japanese Consul—a Chinese general is never averse to negotiation, even after battle has been joined. Several emissaries, however, who were sent in from the Kirin troops to discuss a *modus vivendi*, on their arrival were beheaded in the courtyard of Ting Ch'ao's yamen.

It was now clear that the main threat was from the South-West, and the defenders began to erect hasty and inadequate works in that quarter. These works consisted of two lines of posts, at about 400 yards distance and 30 yards interval; each post was in the form of a semi-circular breastwork occupied by two or three men, but, owing to the frozen condition of the ground, it had only been possible to scrape up little 2-foot banks of surface earth, supplemented by some of the thin snow which had recently fallen. There were no trenches, and the guns were disposed on the open plain 300 yards behind the infantry. On the South-East of the city, however, an elaborate system of trenches had been dug in the autumn of 1931, and was never used. The Japanese began to bomb the defensive positions daily, but the projectiles were old mortar-bombs taken from the captured arsenal at Mukden, and their effect was moral more than material.

By the 30th Harbin had taken on the appearance of an invested fortress, and no traffic of any sort could pass in or out. The buildings in the Japanese quarter were heavily sandbagged and guarded by volunteers, and police were detailed to protect the foreign consulates. Rumours were constantly coming in that the invaders had appeared in the suburbs, but the following morning a personal reconnaissance revealed a Chinese brigade in full retreat from Shuangchengpu, where it had met the enemy and declined to remain. These troops appeared to have suffered no casualties, and stated that they had run short of ammunition and were proceeding to Harbin for the purpose of obtaining some more.

On 1st February, Li Tu sent one of his brigades in requisitioned motor-buses towards Shuangchengpu, with the avowed purpose of avenging the recent defeat at that place. These vehicles were taken straight off the streets of Harbin and made slow progress over the roadless ground, while the droschky-drivers were reaping a rich harvest in the town. Parties of irregulars removed rails at several points along the railway, and attempted to demolish a steel girder bridge by burning piles of straw on the track. The C.E.R. authorities formally protested to Ting Ch'ao, as the local representative of the Chinese Government, but Ting replied that the damage was being done by ill-disposed persons over whom he had no control. Japanese aircraft attempted to bomb some of these parties; they quickly dispersed to neighbouring farms, but resumed their work as soon as the enemy was out of sight.

All next day the town waited for news of the brigade, and especially of the motor-buses, which had gone forth to meet the foe. An ominous silence brooded over the country until the morning of the 3rd, when the brigade came streaming back in disorder, having lost all but a few of its vehicles. A novel sight was the arrival of some unfortunate wounded, a number of whom were carried on litters slung from poles, while others had endured the ordeal of being drawn across country on wooden sledges. It is not surprising that the Chinese soldier is averse to becoming a casualty; many instances can be quoted of the callous treatment to which he is subjected on such occasions. Later in the day three aeroplanes swooped down upon the defences, opening fire with their machine guns, but the marksmanship was such that I did not observe a single hit. Their bombing, however, was more effective, consisting in flying very low and dropping four or eight bombs at a time. It was possible by means of field-glasses to see these bombs released, and to take cover before they exploded; a party of soldiers was struck, however, and every man killed except one. In accordance with local practice, no attempt was made at treatment for the wounded man, as he was too badly hit to warrant hopes of recovery.

On the evening of this day the Japanese motorized advanced guard, which moved parallel to the railway along which the main body was being transported, arrived at Wuchiatzu, a village some fifteen miles away. The irregular cavalry, instead of protecting the rear of the retiring infantry, soon caught them up and galloped into Harbin well ahead of them. Their morale was such that several of them fired at me from the saddle, and subsequently apologized.

On 4th February several units filtered into Sungpu, on the North bank of the river, but did not cross the ice. These troops belonged to the Heilungkiang leader, Ma Chan Shan, who was still breathing defiance at the Japanese from his retreat in the far North; and they remained on the other side of the Sungari in order to see how the situation would develop.

THE JAPANESE ATTACK.

On 4th February a Japanese infantry brigade, accompanied by approximately one cavalry regiment and eight field-artillery guns, had already detrained at some point down the line, and came into action against the Chinese garrison of Harbin.

The action began at dusk with a salvo of shrapnel directed on Intendantski railway station and the western defences. There were only eight Chinese guns capable of replying, and these were 77 mm. pieces manufactured in the Mukden Arsenal under foreign supervision. Many of the guns carried no sights, while there was no artillery observation; they were fired at random in the direction from which the enemy fire was believed to be coming. One field gun, bearing the mark "Putilovski Arsenal, 1902," had been run up a slope and secured by a rope to a telegraph pole in order to give the piece an elevation of some seventy degrees, and so to outrange the Japanese artillery; unfortunately no ammunition was forthcoming for this weapon. Darkness eventually set in and the firing gradually died down, without any considerable casualties having been caused. The population of Harbin passed the night in a state of tension and their overcoats.

At daybreak on the 5th the bombardment recommenced, the Japanese using nothing but shrapnel, presumably with a view to doing as little damage as possible to the city and to foreign property. I took up my position on the top of the meteorological tower of the Chinese Eastern Railway, whence I was able to view the whole field. The Chinese artillery, being unable to observe the enemy, fired wildly "into the blue," some of their shells bursting dangerously near the guns. The infantry lines were early evacuated, the men running for the cover of the houses, leaving some thirty dead behind them. One Japanese

shell, ranging too far, scored a direct hit on a Russian civilian in Bolshoi Prospekt and blew him to pieces. It was possible to see the attackers' battery positions in some farms about 3,000 yards away, and to observe the bursting of the shrapnel over the western outskirts of the town. The Chinese artillery, seeing their infantry streaming towards them, limbered up and were in retreat by 9.30 a.m.

The defenders could now be seen drifting in disorder to the North and East, some crossing the ice and seeking temporary shelter on the North bank of the Sungari, while others followed the railway towards Pogranichnaya and the Russian frontier, looting as they went. Only at this time did the Japanese infantry move forward, and at once came under the fire of machine guns hidden among the buildings at Intendantski Station, which was directed against their left front. As the attackers were restricted to the use of nothing more destructive than shrapnel, their artillery continued to engage the enemy on this part of the front, while the rest of the force, preceded by a cavalry advanced guard, made a wide detour in column of route and entered the city, without opposition, from the South. The Chinese machine gunners, realizing that their position had been turned, gave up further resistance and by 3 p.m. had joined in the general retreat.

There was an element of humour in the head of the Japanese column entering one end of a street and having to halt in order to let the rear-most Chinese get out of sight at the other end. As the victorious brigade began to arrive at the centre of the city there were scenes of the wildest enthusiasm on the part of the Japanese and Russian inhabitants, who lined the streets, waved flags and shouted "Banzai!" The Military Mission, which had been quietly co-operating with the attack from behind the Chinese lines, immediately distributed pamphlets and posted proclamations, reassuring all law-abiding citizens but threatening dire penalties to those of hostile intent. The Chinese police, with commendable promptitude, changed their armlets for some of Japanese design and prepared to maintain law and order on behalf of their new masters.

The four thousand men before whom Ting Ch'ao's twenty thousand were straggling across the plains were joined on the following days by the remainder of General Tamon's Division, and organized resistance was at an end.

A JOURNEY TO JEHOL.

Soon after the fall of Harbin the establishment of an independent Manchu State, under Japanese protection, was announced; and it was made clear that the boundary between Manchuria and China was to be the Great Wall. This meant that the Province of Jehol, hitherto

considered as part of Chinese Mongolia and outside the Wall, was to be included in the new state.

At the beginning of 1933 Tang Yu Lin, the Governor of Jehol, who for some time had been unable to decide on his future allegiance, was won over to the Chinese side by Marshal Chang Hsueh Liang, who filled his province with troops from within the Wall. Tang then issued a stirring manifesto, in which he declared that he and his army were ready to die "for the glory of Jehol and of China." Having already witnessed the defence of Harbin, I was anxious to watch the glory of Jehol being vindicated, and prepared to leave Peking for the front. The first problem was how to get there. There is a main road leading from Peking northwards over the pass of Kupeikou to Chengte Fu, the capital of the disputed province; this route, though unmetalled, had been rendered just passable by motor traffic during the dry months of winter by the removal of boulders; and in normal times a willing but ramshackle Dodge car could be hired for the trip, which is 150 miles and takes two days or more. At that time, however, there was a certain amount of panic among the natives of Peking; the northern gates of the city were closed at dusk, and it was impossible to obtain the use of any form of conveyance, horse-drawn or mechanical.

On 24th February the Japanese invaded Jehol, and there was no time to be lost. In my hurry to find a horse I went to the Mongolian horse market outside the Tartar Wall of Peking that very afternoon, where I purchased the most unlikely-looking animal that could be imagined, herring-gutted, straight-shouldered, wild and fresh from starvation in the Gobi. As most new arrivals from Mongolia are in much the same condition and there was a good chance of losing this one during the course of the operations, I christened him Rosinante and determined to make the most of him. The chief difficulty now was that nobody was willing to act the part of Sancho Panza on any condition whatever; a large proportion of the Pekingese are Manchu or Chinese Bannermen, whose families have for generations regarded Peking as the only place fit to live in, and to them Jehol spelt battle, murder and sudden death. I was consequently bound to the principle of carrying what I could in a haversack and living on the country as far as possible, although it was not at all certain that the ice-bound hills beyond the border could provide subsistence for man or beast in time of war.

At sunrise on the 25th my pony was ready. He was a washy chestnut, had never been approached by a white man, and hated me at first sight, especially as I presented a somewhat grotesque appearance in my fur cape, long shepskin-lined coat and Gilgit boots. It was soon apparent

that the boots were far too big to fit into any ordinary stirrup, so I was compelled to have recourse to a native pair, inlaid with silver and weighing some five pounds each, which had been doing the duty of door-stops in my house. Having mounted, to the accompaniment of the anticipated bucking and kicking, I found myself unable to dismount again, as the boots, once forced into the stirrups, would not come out. The pony refused to let anyone approach my feet, so that I had to remain mounted until I had accustomed him to forward body-bending to the right and left.

To the accompaniment of loud cheers, not unmingled with derisive opposition laughter, I trotted out of the Legation Quarter and turned northwards up the Hatamen Street, and finally passed through the gate in the north-eastern corner of the Tartar Wall, one leaf of which had been closed in accordance with the habit in Chinese cities when there is the fear of a military disaster, and followed a sunken cart road which led towards the Northern Hills. In the present condition of my pony I found that the best pace was a jog of some four and a half miles an hour, with a rest of five minutes in every sixty. He was a complete slug, and only the tinkle of the metal balls in my ornamental stirrups kept him moving at all; he would go along with eyes half closed and then stumble right on to his head. This was particularly unnerving, as I knew that if I fell off I should probably be unable to mount again.

For the whole of the first day the country was dead flat, mile upon mile of frozen sand stretching away towards the hills. There were about 20° of frost, and not a sign of vegetation to be seen, while every now and then one would be greeted by a cloud of that gritty Peking dust which creeps icily into the eyes and ears and lodges between the teeth. At noon I reached the hamlet of Kuliushu, where I made my two-hours' midday halt and obtained water, kaoliang and bran for Rosinante; and as I carried no food except an emergency ration of Oxo and chocolate, I made my lunch off millet porridge and unleavened cakes at a caravanserai. This village was inhabited by one of the Moslem colonies which are scattered throughout North China, and the Ahung showed us round his mosque. Chinese Mohammedans wear nothing to distinguish them from their Buddhist or Taoist compatriots; only by their aversion to pork and their prominent noses can one readily tell them apart. Mosques in China are similar in outward appearance to any other temple in that country, having the usual turned-up eaves and tiled roof, but within are to be found nothing but a few prayer-mats, a reading desk, and some ornamental inscriptions in Arabic; the Koran is read in the original tongue, which is not understood by the congregation.

Towards evening I rode into a wooded district where there were a

number of villages, inhabited by wood-cutters and charcoal burners. At dusk I put up at an inn which consisted of two rooms, each measuring fifteen feet by twelve, one of which was occupied by the host's family and supplies, while the other accommodated a camel-driver, two merchants who had just arrived in a cart, a muleteer, and myself. My pony shared an open shed with two donkeys, three mules and a camel, and I managed to obtain kaoliang, bran and chopped straw for his feed. It was necessary at these inns to fill the manger oneself, and to look into it at intervals in order to ensure that one's animal received his full ration. Grooming was confined to brushing the frost off his impenetrable coat with a broom. I was not so fortunate, as the only food I was able to buy was a kind of macaroni and an old hen, which was beheaded in my presence, while I was forced to quench my thirst with hot water into which tea-leaves, dust and twigs had been indiscriminately sprinkled. At length the five of us huddled together on the brick stove-bed and fell loudly asleep, unperturbed by the smoke which filled the room from the brushwood fire under our sleeping place.

At dawn I shook the drowsy landlord until he produced forage, and was able to get away early, as we had slept in a temperature scarcely above freezing point and there was no dressing to be done. During the forenoon I struck the main Peking-Jehol road, which I had hitherto avoided in order to take a short cut. Instead of the anticipated streams of military traffic, this bare stretch of dried mud was practically deserted, showing that the Chinese command was following Napoleonic teaching, as far as supply methods were concerned.

At midday I crossed a wide, sandy watercourse, on the far side of which stood the castellated walls of Miyun Hsien, with its four gate-towers facing the four winds. Here were the first signs of war. As I entered the city gate I was challenged by a sheepskin-clad sentry armed with a Mauser pistol and a curved beheading sword. On showing him my rice-paper passport, which he stared at upside down for some moments, I was conducted to the headquarters of the garrison commander. As I arrived the general, muffled in an enormous fur coat, was dismounting from a pony almost as furry as himself, and received me with the hospitality which is the chief asset of the Chinese Army. Rosinante was led off to be fed at the public expense, but some astonishment was expressed at the arrival of a foreigner without a native servant or groom. Being compelled to subsist on Chinese food, I looked forward to meals with a sense of adventure and attacked heartily the dried prawns, pickled seaweed and wood-fungus which my host set before me. Indeed, one felt one should eat all one could in view of the uncertainty as to when, or even whether, one would dine again.

It is always difficult to break away from a hospitable Chinaman, and it was nearly three o'clock before I had bowed my way out and retrieved my pony. The route now lay among the boulders of the river bed, and brought me to Shih Hsia just as they were closing the city gates. The commander at Miyun Hsien had given me a letter of introduction to the general, who put me up for the night in a room heated by a bowl of charcoal, and with paper windows which admitted of no ventilation. As I was not asphyxiated by the morning, I was able to indulge in the amusing and appetizing game of fishing with chopsticks for boiled eggs floating in soup.

At Shih Hsia the plain was left behind, and the road climbed into the mountains towards the Great Wall, whose watch-towers could already be seen upon the northern skyline. I passed several battalions of fur-capped, ragged soldiery on their way to the front, followed by their trains of requisitioned carts and camels; I also met an occasional motor-lorry flying the three-cornered dog-toothed flag of the Governor of Jehol, loaded with women and other baggage, its neglected engine struggling to reach Peking before it succumbed. These were not signs of a Japanese reverse, yet the soldiers to whom I spoke all grinned and assured me that they were on their way to drive the "Dwarf Slaves" beyond the northern marches.

Shortly before 11 a.m. I rode into Kupeikou, the gateway of Jehol. It is an unfenced city, clinging to both sides of the Great Wall, which climbs over the hill-tops like a twisting snake and guards the pass with its square towers. At the top of a steep slope I found the local headquarters, which were aptly situated in the temple of the God of War, and was entertained to a full Mandarin dinner by the officer commanding. After the meal I was taken to a terrace perched right on the Great Wall, whence I was able to view the snow-capped hills that appeared to present as difficult a problem to an invader as any terrain on the Indian frontier.

Passing through the ruinous archway which leads out of China, and which was guarded by a sentry with a long red-tasselled spear, I followed a winding course between the hills, every now and then having to dismount and lead over a frozen stream. Some of these crossings were precarious for troops, as the period of thaw was approaching, and there were many places where a wheel had broken clean through the ice. If the Japanese did not get through soon they would have to wait till the autumn.

I had been unable to obtain any satisfactory large-scale map of the territory which I was traversing, and topographical information was perforce derived from the sparse local population, which seemed to

consist entirely of village idiots ; in consequence I lost my way, and at dusk found myself at a small caravanserai in an otherwise deserted valley. I was at once surrounded by half a dozen gaping natives in filthy sheepskins, and after the usual preliminary gossip was provided with a room and a meal of macaroni, which was the best that they could produce. There was no grain for Rosinante, so he had to do what he could with wheat flour and black beans ; it spoke well for his digestion that he continued to eat heartily and was none the worse in the morning. The people of the place knew nothing of clocks and could not reckon time in hours ; they had heard, however, of England and America, and described them as rich mercantile nations, an illusion which I strove to dispel from the mind of my host. The Russians, of whatever breed, were locally considered as "stupid worms," while they knew nothing of Germany beyond the name.

I had the stove-bed to myself, but there was only enough brushwood available to fill the hovel with smoke. My bedroom, therefore, remained at the same temperature as the Great Outdoors, about zero Fahrenheit at this altitude, and it was almost impossible to sleep, even in sheepskins and Gilgit boots. Consequently there was no difficulty in rising before dawn and leaving the hamlet at daybreak, taking a local guide to show me the way back to the main route.

The path led over a snow-covered pass at about 3,000 feet, and it was necessary to lead the pony. The whole world seemed to be filled with white peaks and devoid of animal life ; while the hills themselves, like the few inhabitants we met, looked bony and ill-nourished. By 11 a.m. we had descended to the main route, which now followed a broad and sandy valley, and halted for two hours at the first inn we came to. Here I dismissed my guide with the equivalent of sixpence and sought refreshment. It was quite a busy place ; there was a train of camels kneeling in the yard, while boxes labelled "Fire Medicine" were being adjusted on their backs ; and outside was another of Tang Yu Lin's motor-lorries laden with baggage for Peking. Round a brazier squatted a party of woolly-looking soldiers, who told me that the Chinese had already slaughtered thousands of "Dwarf Slaves" in the North.

During the afternoon I passed a column of about 600 infantry on their way to the front, and more camels carrying supplies ; these two-humped Bactrian camels, with their heavy coats, had been impressed by thousands for the winter campaign, and moved easily over the dry snow and sand.

At seven o'clock I rode into Luanping, which was occupied by a regiment of the Governor's bodyguard ; in consequence every inn and stable was in the hands of the troops and there was not a bit of food to

be had. I accordingly called at the garrison commander's yamen, and was courteously received, being lodged in the Chamber of Commerce and having Rosinante once more made a charge on the public. The head of the Chamber, with some other merchants, entertained me—probably under pressure—to dinner, and did his best to discover my personal opinions with regard to Japan, Russia and Communism. He was a good conversationalist, even for a Chinese, to whom talking comes naturally, and told me that China's greatest weakness was opium smoking. As if to illustrate the truth of his argument, he was lying on a couch in a robe of blue silk, drawing at an opium pipe, which he insisted on my trying.

After a comparatively warm night in the company of a bowl of charcoal I awoke to find it snowing hard, and waited with impatience till 9 a.m., for now that the Japanese invasion had begun I felt that any delay might make me too late. As the snow was too dry to ball in the hoofs, and there was a telegraph line leading to Chengte Fu, I was able to find my way through the storm.

THE OCCUPATION OF JEHO.

At 1 p.m. on this day, 1st March, I entered the capital of Jehol. It is a small town of single-storied, grey-tiled houses, lying at the gates of the palace and surrounded by a great amphitheatre of snow-capped hills. Like Kalgan and other towns on the Mongol border, it has no town wall; the palace and park, however, built by the Manchu emperors and subsequently the Governor's residence, are surrounded by a high wall some twelve miles in perimeter, which winds up and down hill like a miniature Great Wall of China. I carried a letter of introduction from the Belgian Legation to Father Conard, of the Catholic Mission, who received me most hospitably and gave me a room with the first live stove which I had seen since leaving Peking. I found "One-armed Sutton," Owen Lattimore, the explorer, and an American newspaper reporter already installed in another room, while in the afternoon we were joined by a cinematograph operator and a Russian officer belonging to the Young Marshal's new air force, which, incidentally, never left its aerodrome in Peking during the whole of the campaign. The good Father appeared not in the least perturbed, welcomed heartily each arrival and disposed us about his diminutive Chinese house on bedsteads, sofas and floors. He had known Jehol for thirty years, and told us that the population had been driven to the point of revolt by Tang Yu Lin's oppressive rule and would appreciate the arrival of the Japanese if it entailed the overthrow of the old regime. As an instance he cited the case of the 1930 opium crop, on which the tax had been remitted on account of its failure. This year (1933) the

Governor had decided to collect the tax, not only on the current annual crop, but also, owing to his being short of funds, on the poppies which had failed to grow three years before.

Leaving Rosinante in the Mission stables, where only bran and chop were available on account of the army's depredations, I set off on foot to call on the Poppy King. Passing through the narrow streets one noticed that the pigtail, which went out of fashion in China with the passing of the Manchus, was still worn by a large number of the people of Jehol; foot-binding also persists throughout North China, except where missions and foreign education have discredited the practice. The traffic consisted mostly of horsemen moving at a canter or amble, while every now and then one came upon a litter carried by two mules, one in front and the other behind.

On arrival at the palace gate, which was guarded by a pair of stone lions and a sentry equipped with a beheading sword and a rifle, I was informed that everybody was too busy to see me until the morrow, as the troops were actually to be paid, an event which had not happened for several months. Mr. T. V. Soong, the Minister of Finance, had arrived from Nanking a few days before, and personally delivered the cash; so now the whole of the headquarters staff was occupied with this epoch-making affair: it really looked as if the Chinese Army was going to fight.

On the next morning it began to snow quite heavily, and as I walked to the palace there were no signs of troop movements in any direction. An employee of the telegraph office, however, confided to me that all communication had ceased between Chengte Fu and Lingyuan, through which passed the main line of resistance. I was received by the chief of the Governor's household, a portly Manchu with a red moustache; this gentleman was reputed to have kept an establishment of singing girls in Mukden and to owe his promotion to the recommendation of one of the Governor's harem. As is usual in the case of a visit to an important Mandarin, I was led through a number of courtyards to a chilly waiting-room and provided with cigarettes and tea. The courtyards were full of women, many of whom were dressed in rich silks. There was an atmosphere of packing; coolies ran across courtyards laden with bundles, while carts were being loaded with women, children and luggage. The rooms were singularly empty, most of the old imperial treasures having already been consigned to a place of safety.

Suddenly the unfamiliar noise of an aeroplane was heard, and everyone ran out into the courtyards. The snowstorm had passed, and above us could be seen the first Japanese aircraft, circling leisurely over the town at a height of 1,000 feet, with the red circles of the Rising Sun

clearly visible on its planes. I asked a gazing official whether there were any local anti-aircraft defences; he replied that Chengte Fu was defended by ten anti-aircraft guns, but that the aeroplane was flying too high for them. In spite of this, a regular *feu de joie* from rifles and machine guns was fired all over the town, and several bullets fell near us. The aircraft, having dropped nothing more deadly than leaflets urging the people to join their Manchurian neighbours in the struggle for freedom, flew slowly away over the mountains.

At about 2 p.m. I was led to the audience chamber, where I was received by the Governor of Jehol. He was a short, thick-set man with the build of a gorilla and a grey drooping moustache, wearing a fur cap and the uniform of a general. Tang Yu Lin was well known as an expert in the ancient Scythian art of shooting at a target while at full gallop, an exercise in which the cavalry of Mongolia and Jehol are trained. After an exchange of bows he asked me to sit down, and immediately began a long speech, in which he declared that he had done his best to resist the enemy, but had been betrayed by politicians: he had probably read similar speeches by western generals. I asked him whether he would give me the present dispositions of his forces, to which he replied that he would be delighted to do so did he but know where they were; he said that his province had been filled with Peking troops, whose officers were taking all authority out of his hands, while the Nanking Minister of Finance had actually presumed to bring them pay.

Seeing that the old man was about at the end of his tether, I asked whether he would allow me to visit his park, to which he readily agreed, glad, no doubt, to be rid of me. I mounted the wall and walked along the top of it, whence I had, on the right, a view of the snowy ranges, and on the left the prospect of the immense park, with its tame deer, lakes and ruined pagodas. The wall led me to the top of a ridge, where I found myself looking across the valley which so astonished Lord MacCartney when he brought his great yellow coach over the passes as a present for Chien Lung. On the far slope, in company with an array of minor temples, stood the two famous monasteries of Pootala and Tashilumpo, replicas of the Tibetan shrines of the same name. The Pootala is characterized by its huge square, red-washed, flat-roofed buildings, surrounded by chapels and the monks' quarters; the architecture is Tibetan. The style of Tashilumpo is mainly Chinese, with its roofs of coloured tile and its strange pagoda growing out of a lower building, while the lamas at both places are Mongols.

After sunset I took a short cut back to the Mission across one of the frozen lakes, and found our house-party augmented by two members

of the French Legation and two more newspaper men. Father Conard was undaunted and ordered dinner to be served in three relays. Information leaked out from the telegraph office that the Chinese in the North were falling back before Mongol cavalry under Japanese direction, while their southern flank was being pressed by tanks and armoured cars, which were able to advance along the river beds. I resolved to go forward next day, as Rosinante had benefited by his day's rest and I had four European meals inside me. Before dawn, however, information came in that Chinese troops were streaming through the town in full retreat, and that the Governor had fled. I ran out into the yard and found my companions, who had risked their private cars on this trip, hastily filling their vehicles with fuel and burning little fires under their engines to facilitate starting. After giving the pony a light feed, I put on my equipment and went out into the street. The panic was indescribable. Soldiers were removing every cart on which they could lay hands, and men were galloping hither and thither, shouting incoherently. The Government yamens were deserted, and their doors were no longer guarded by sentries with red-tasselled spears. In the hills could be heard the rumbling of guns.

I remembered the Chinese principle of war, that flight invariably entails looting to the fullest extent possible, and determined to lead the retreat rather than follow it. I saw the last motor-car and its chains rattle out of the yard, and mounted my pony. The streets were full of camels, carts, mule-litters and ponies, but the remarkable feature was that the local inhabitants stood in their doorways and quietly looked on; only the troops and officials were leaving. On my way I passed a building labelled "Field Hospital," but found that no wounded had ever been in there. In the pass which leads out of the Chengte Fu valley I overtook one of the cars, which was quite unable to mount the icy slope. My own passage was none too easy, for the pass was literally jammed with troops and transport, all trying to get through first. I had to dismount and lead Rosinante over the mountain in order to get clear of this rabble, and as I returned to the main route it began to snow. At every turn were the motor-cars of officials, some with wheels off, others having skidded over the edge of the road, while a number had fallen through the ice while crossing a stream. The drivers and passengers were in most cases sitting fatalistically by the roadside, vainly hoping for something to happen. Some Jehol cavalry rode past at a gallop, shouting to me to beware of bandits, who always harry a retreat in China, and were soon hidden by the falling snow. The saddle-cloths of these troops were made of carpet in all colours of the rainbow, and added to the picturesque effect of their high-arched wooden saddles and ornamented stirrups. Soon more cavalry came by, driving before

them any ponies or cattle which they found grazing on the snow-covered hillsides.

I could not hope for more than five miles an hour from my mount, and as it grew dark I began to get anxious as to how I should spend the night. I could hardly see the road, and the snow blew thickly in my face, until I was suddenly dazzled by a pair of headlights and fell into a ditch. A car pulled up containing the China correspondent of an enterprising British newspaper, bedding and plentiful supplies. Hearing that he was too late to reach the capital and that he ran a grave risk of having his property looted, my Fairy Godfather turned rapidly round in the road and drove slowly in front of me to the village of Wangchiayingtzu, where we installed ourselves for the night and had our first meal since the morning. In the night we heard the rumbling of wheels and the grunting of camels as they poured past our camping place, but we barred the gates of the yard and prepared to assert ourselves to the best of our ability should anyone try to billet himself in our enclosure. News was current that most of Tang Yu Lin's army had joined the Japanese, who were advancing up the valleys in motor-lorries, preceded by tanks and armoured cars to brush away opposition. The countryside had been denuded of grain, and Rosinante had to be content with black beans and bran.

In the morning we left the pony in the caravanserai and motored forward to Luanping, which was only 12 miles from the capital. The place was in utter confusion; the garrison was packing up and leaving—most of the officers had already fled—and the soldiers were going from house to house looting anything, even doors and windows, which they could lay hands on. A train of camels passed, led by an officer on a shaggy pony. "The Japanese are in Chengte Fu," he said, but his camels seemed perfectly indifferent, strolling along in that supercilious manner which is so annoying to anyone in a hurry.

Seeing that we were attracting an unpleasantly inquisitive crowd, we started the car, and as we did so a Japanese aeroplane droned overhead and dropped a couple of bombs close by. Thinking that we might be mistaken for a Chinese tank, we returned rapidly to Wangchiayingtzu and discussed future plans. It was evident that the only place where the Chinese could possibly rally would be in front of Kupeikou, where they might be induced to make a stand in view of the fact that they would be defending the gateway of China proper.

RETREAT TO THE GREAT WALL.

Next day I joined my motorist friend at the temple of the God of War, on the Great Wall, where we were interested at meeting one of

the German officers belonging to the Military Mission at Nanking. He told us that he had prepared a wonderful plan, by which several Chinese columns were to converge by a number of valleys against the flank of the Japanese advance; he had not, however, been in China long enough to realize the utter contempt of the Chinese for punctuality or the value of time.

The general at Kupeikou informed us that he had been ordered to advance immediately and take up a position in order to bring the enemy to a standstill before they reached the line of the Wall. He placed his late headquarters at our entire disposal and left hurriedly, with the parting advice to keep our eye on our motor-car, as he was afraid some of his men might very likely steal it. During the evening an officer asked whether we would lend him the car for an important reconnaissance, so we quickly removed an appropriate part of the mechanism. After the general had left, his orderly entered the temple and packed up his equipment. Laying a square of blue cotton cloth on the floor, the orderly placed in it about twelve training manuals (including "Instructions for the Use of Big Swords"—illustrated), a pretty painted calendar, a box of calling cards, a Thermos flask and most of the letters which were lying on the table. He then tied up the lot into a bundle, bowed politely to us, and left for the front.

Next day we drove northwards again as far as Chingshuiliang, a pass some 20 miles from Kupeikou, where our friend the general was personally disposing his division on the ground. The defensive arrangements were simple; one battalion was scattered in section posts on the skyline, while the remainder of the formation sat on the roadside in rear. Local inhabitants were impressed to hew shallow trenches out of the frozen ground, while machine guns were sited on the highest peaks so as to give a field of fire of about twelve miles. The road was blocked by piling felled telegraph poles upon it and by building walls of loose stone. The infantry of this division were equipped with beheading swords in addition to rifles, weapons against which, to quote the Chinese newspapers, "the Japanese tanks and artillery could do nothing."

As we watched these preparations and gazed across the hills for signs of the enemy a Japanese aeroplane flew low over us, but fortunately did not use its machine gun. A few seconds later, however, there was a loud report on our left and some bomb splinters struck a rock near by. Being unwilling to become casualties in someone else's war, we made all speed back to our temple on the Wall, encountering *en route* a scene of almost indescribable confusion. In a narrow defile two divisions were trying to pass each other, one retreating from Chengte

Fu, and the other pushing forward to the new position at Chingshuiliang. Since the pass was only wide enough for one-way traffic, the struggle was a fierce one. Camels with still unopened ammunition boxes were sauntering southward, while similarly loaded camels were sauntering in a northerly direction; jammed between the two was an ancient Ford car, whose driver offered to do us a good turn by giving us five gallons of petrol in exchange for one of our wheels.

The approach of Japanese bombers was the signal for our own retreat, and five miles outside Kupeikou we overtook Tang Yu Lin himself, mounted on a Mongol stallion and accompanied by fifteen horsemen who alone had remained faithful to him. We dismounted and exchanged courtesies, after which we asked the ex-Governor whether we could assist his retirement by giving him a lift in our "gas carriage." The old man's reply was: "Thank you for expending thought on my account, but it will be to my advantage to ride." As far as I know this was the last occasion on which he was seen in public.

That evening the artillery, which had been kept in reserve and never used, started to come back, and the following day dawned on further chaos. The retiring army poured through the narrow gateway of Kupeikou, completely blocking the reinforcements which had been ordered up from Peking to defend it. Realizing that it would not be many days before the Chinese garrisons were bombed out of the frontier passes, I set off for home on the thinnest but stoutest pony that ever left Mongolia.

By April the Three Eastern Provinces and Jehol had been incorporated into the new state of Manchukuo, and since that date military operations have been confined to punitive expeditions against guerrilla bands.

CONCLUSIONS.

Can these operations, strangely unlike those to which we have become accustomed in the West, afford any lessons to the modern student of war? I suggest that the following deductions may usefully be made:—

(1) Against a semi-civilized or guerrilla enemy absolute *security* is more important than *surprise* or great *mobility*. The Japanese were aware that even a minor disaster would stiffen incalculably the resistance of an enemy so prone to self-deception as the Chinese; while the local population might be encouraged to harass their flanks and rear communications. They consequently sacrificed surprise to a great extent by taking eight days to reach Harbin from Changchun, a distance of only 150 miles by rail. The advance was extremely methodical, the

trains being preceded by armoured cars on flanged wheels, which reconnoitred sections of line before any troop train moved over them. The advance was stopped and covering parties detrained whenever damage to the track was encountered; while potential raiders were kept at a distance by protective detachments carried in lorries. In the case of an opponent like the Chinese such a deliberate and irresistible advance was more certain of success than one carried out at high speed, but with the accompanying risk of "unfortunate incidents." Jehol was occupied by three converging columns totalling little more than 8,000 men, which advanced methodically along three main approaches, preceded by aircraft, armoured fighting vehicles and small motorized advance guards. The aircraft induced the Chinese to withdraw their guns, while the armoured forces cleared the valleys and opened the way for the infantry occupation. Chengte Fu was entered without opposition by 500 men and a brass band.

(2) The Japanese interpreted the principle of Economy of Force as prescribing the use of inferior weapons against an inferior enemy. Their aerial bombs were merely trench-mortar shells manufactured in the Mukden arsenal, formerly under the direction of "One-armed Sutton," and captured when that city was occupied by the invaders. The percussion device included an ordinary 12-bore cartridge; about 30% failed to explode. Many of the armoured cars were actually light motor-cars covered with metal plating which probably was hardly bullet-proof; the horse transport consisted of requisitioned native carts and drivers. The troops which came into action at Harbin did not exceed one cavalry regiment, two four-gun field batteries, and three companies of infantry; their casualties were negligible. In the advance through Jehol the mechanized arm was the only one which really came into action; the infantry were used for consolidation and occupation.

(3) With regard to the Chinese forces in Manchuria, they never once "put up a show." They had the benefit of German staff work, of vastly superior forces, and of twenty years of civil war. The National Government had spent large sums in the purchase of aircraft, tanks and other modern weapons. Against this must be set the fact that the Chinese infantry were sent into action with beheading swords, spears and hopelessly inadequate quantities of rifle ammunition. The mechanical weapons in the hands of the Government were considered too valuable to waste in fighting, and the few motor lorries available were employed for private purposes. Under such conditions could any troops in the world face a modern army?

DISCUSSION

There was a short Discussion; and the customary votes of thanks to the Lecturer and Chairman were then carried by acclamation.

THE NEED FOR A SPECIAL COMBINED STAFF

By MAJOR A. N. WILLIAMS, *p.s.c.*, R.M.

FIELD-MARSHAL SIR WILLIAM ROBERTSON has said that the effort of the British Empire during the last War was but twenty-five per cent. of the whole.¹

Sir Frederick Maurice, commenting on that statement, says: "On the outbreak of the Great War our Fleet and our small Army were as well prepared as we can reasonably expect to find them in another like case. The Committee of Imperial Defence had elaborated a War Book which set forth the emergency legislation needed and the action of every Government Department. All this stood the test of experience. But no one had thought out the most important preparation of all, a system for the conduct of war. . . . so we entered upon the War with no system and had to pay the price of neglect."²

Since the War, British policy, setting an example which it was hoped would be followed, has been directed towards the reduction of our fighting Services. The insistent need for further economies has been, and still is, one of the main factors which has tended to mould the outlook of officers of the post-War period. In many ways its effect has been of distinct benefit, for it has widened the sense of responsibility for the spending of public money and has led to much constructive improvisation. It can hardly be denied, however, that the work of the staff and of other officers has been taken up, to a large extent, in devising plans to make barely adequate resources meet requirements which have been reduced to a minimum.

It is possible that these efforts to secure increasing economy may have been responsible for only slight modifications in our organization and inter-staff system being made, where changes, dictated by experience and modern developments, would otherwise have taken place. Recently, however, there has been an impressive alteration of opinion in regard to future war in its relation to our own security. The danger of unilateral disarmament seems to have been realized, and the time

¹ "From Private to Field-Marshal," by F.-M. Sir William Robertson, p. 322.

² "Government and War," by Major-General Sir F. Maurice, p. 120.

seems opportune to review our position and to consider what changes are necessary in our existing system.

The problems to be faced are not only difficult, they are unique. No other Empire exists, or has existed, which is as large, as scattered, and as politically independent in its constituent parts, as ours. Many of the questions which have arisen are new, and past experience cannot provide solutions to all of them. Constitutional, economic and social changes have been so rapid and great that, as General Smuts remarked a few months ago, "We are starting out on a new idea." There are other facts, too, which do not lessen the complexities. For centuries our battle ground in major wars has been relatively close to England. The possibilities of the future cover the globe. World Powers are more distributed than they were, and our superiority in some important directions is not as marked as it was. Our Mercantile Marine, essential and so long pre-eminent, has seriously declined. One million tons of British shipping were sold to foreign Powers in 1933, to be operated in competition with what we have left. Our principal centres of population and industry are no longer safeguarded by a strip of water; they have become vulnerable to local attack. Our mobility on sea, land, and in the air, is governed by the supply of a fuel not found in anything like sufficient quantities inside the Empire. Our dependence on oil and petrol is becoming absolute and the demand created by any future war may easily overstrain the available means of transportation.

There are, however, assets which can be used to advantage, paramount among which is—and must continue to be—our sea supremacy. Without control of our sea communications we should suffer complete defeat. The effect of sea power can be made far reaching. Its exploitation should be examined so that the best use can be made of the instrument in our hands. Not since the days of Marlborough and Pitt has it been used to its full advantages. It provides an unrivalled opportunity for making use of the most powerful and effective weapon in war—surprise—and at the same time affords a chance to gain combination of maximum force. The threat of an attack coming anywhere from "out of the blue" must inevitably cause the enemy to disperse his strength. Although British campaigns contain several examples of brilliant minor amphibious operations, it is unfortunate that in major operations of that character we have been unsuccessful. It is therefore sometimes argued that the difficulties in the way of such operations on a large scale outweigh the advantages which may arise, but that, surely, is a fallacy. The failure has been traced by historians to have been caused by poor direction and a lack of harmony in control. It was the system, rather than the principle, which was at fault.

The solution to such problems as have been outlined rests largely on the joint planning between the Services. In fact, the mainspring of successful preparation and conduct of war lies in co-operation and co-ordination, and it is in that respect that our failure in the past has usually lain.

A brief summary is sufficient to demonstrate how closely the Services are interlinked with each other. For instance, there can be little doubt that in a fleet action between equally matched ships, the side which obtains air superiority soon after first contact is made, will be placed in a most favourable position and victory should be secured. The result of such a battle to a maritime empire such as ours may well determine the whole issue of the war. It may be necessary to employ air units in addition to the Fleet Air Arm, to make certain of our air supremacy in the battle area. In an increasing number of localities this will not only be possible but essential, for it is noticeable that along the sea communications of the world, strong air forces are to be found interlinked with navies.

Similarly, combined planning will be required to deal with the menace of air attack on our capital city, and the port and industrial areas connected with it. It is obvious that highly effective retaliatory action can be undertaken, not only by the Air Force, but also by the Navy and sea-borne aircraft operated in combination from points off the enemy coasts. The threat of such joint measures of retaliation may make a nation consider seriously whether air aggression against us is worth while.

Again, in the defence of our ports, sea approaches, restricted waters and coasts, naval and air forces will have to work in conjunction with each other.

When we consider the Army, the same need for co-ordination with the other Services is evident. The Army provides garrisons abroad and at the same time is able to place a small expeditionary force in the field. Its mobility and maintenance rest on the Navy and Mercantile Marine. Conversely, by the protection it affords to naval bases, the effective radius of action of the fleet is extended beyond home waters. Although the Army is capable of considerable expansion, its relatively small size should preclude it from being employed on a continental basis such that little or no margin remains to exploit the asset of sea power. "He that commands the sea," says Bacon, "is at great liberty and may take as much and as little of the war as he will." The history of our major wars, since the days of King Harold, prove that Bacon's statement is justified. It does not follow that the Army is primarily an

auxiliary to the Fleet ; rather it is a co-operator which can seize opportunities either singly or in combination with the other Services.

There is now a third arm, whose influence on land and sea warfare is so marked that neither of the older Services can fight effectively without it ; in fact, both contain ancillary air units under their own control. The provision and maintenance of air equipment and personnel for these special air units, particularly in war, will obviously call for mutual co-operation. The same inter-dependence on the other Services applies with no less force to the air. The range of aircraft being limited, movement to overseas theatres of operations far afield will involve transportation in ships, protected by the Navy, and, on arrival, it is probable that soldiers will be required to defend the air bases. If these bases are situated on an island or near the coast, some form of naval defence will also be necessary.

So far as defence is concerned, co-ordination should not prove difficult ; in attack, however, this will not be so, for the lessons of history indicate that considerations of each separate Service are wont to overshadow the general requirements of national strategy. Linked up with all this is the question of Empire co-operation. This necessitates the matter being reviewed in wider perspective. What seems to be needed is a plan which will ensure combination of effort while providing adequate local defence. "All the defensive plans of the Dominions and Colonies are based on the power of the British Navy."¹ If Great Britain undertakes naval protection in certain geographical areas a corresponding relief in the form of land and air security may be given by some other country in the Empire. It entails a scheme of rationalization. Without in any way affecting independence of action within the Commonwealth, some centralization and decentralization of responsibility could be obtained, for both are necessary.

To sum up, it appears that a system should be introduced which will ensure close concert between policy and strategy, and provide effective co-operation between the fighting Services. Field Service Regulations concisely and clearly state, "there must exist unity of direction and control of the armed forces. This is exercised by the Ministers of State who have executive responsibility for the conduct of war and who, with the assistance of the Heads of the three Services, decide upon the plan of campaign and maintain the necessary personnel and material. Close touch is preserved between the Chiefs of Staff in order to secure co-ordination in all matters relating to more than one Service."²

¹ Speech of First Lord of the Admiralty, *The Times*, 10th September, 1934.

² Field Service Regulations, Vol. II, p. 3.

The question as to whether a solution to the matter would be better found by the establishment of a Ministry of Defence has been examined and discarded as impracticable. For much the same reasons it does not seem feasible at the present time to vest the command of sea, land, and air forces under one Commander-in-Chief—"Un Commandant des Forces Militaires du Pays" as the French General "A" calls him.¹

Our present system was explained in an article written eight years ago in which it was stated, "The responsibilities of the three Chiefs of Staff in connection with the Committee of Imperial Defence, are now clearly defined as being both individual and collective. They are definitely charged with advising on defence policy as a whole, as well as with representing those aspects of defence which particularly relate to their own Service. To facilitate the discharge of these duties, the Chiefs of Staff, by themselves, meet in committee, thus enabling the more technical aspects of a question to be discussed before it comes before the larger Committee of Imperial Defence. If full use is made of this machinery and the functions of the Committee are developed to be executive and not merely advisory, there seems no reason why co-operation at the top should not be ensured without superimposing some additional Ministry of Defence to complicate the mechanism and retard progress. It is at the next stage that we find one of the weakest links. The supreme direction of the fighting Services cannot function smoothly and efficiently unless there be a staff to prepare the ground-work of the important problems."²

The initial preparation for the institution of such a Staff has now been carried out. For several years interchanges of officers at the Staff Colleges and War Courses have taken place. The Imperial Defence College has been in existence long enough for an appreciable number of officers to have passed through it. Co-ordination in matters of detail, combined manœuvres and exercises, and demonstrations by one Service for the instruction of officers of the other two, have all led to a widened knowledge, and it seems that the way has been paved for the establishment of an essential modern requirement—a Special Combined Staff.

Books on the last War, written by eminent statesmen and officers, demonstrate frequently conflict in the advice given by the Chiefs of

¹ R.U.S.I. JOURNAL, August, 1933, p. 576: "The Offensive in Future Warfare." a French view.

² "Practical Co-operation Between the Services," by Captain E. Altham, C.B., R.N. *Fighting Forces*, 1926, p. 651 *et seq.*

[This article went on to advocate the formation of an Inter-Service Staff Committee on the lines of the United States Joint Army and Navy Planning Committee.—EDITOR.]

the two Services to the Ministers responsible for the direction and control of the War. There are now three Services, and unless plans can be unified before they reach the War Council, worse troubles will arise. Moreover, in peace time, as in war, the relative value and limitations of the Services should be assessed and determined by trained officers who have, as far as possible, been removed from the influence of partisanship and the narrowed outlook of one particular Service. "There is nothing more to be dreaded in war," wrote Colonel Henderson, "than the combined labours of a well trained staff, except the intellect and audacity of a great strategist."¹

If the labours of the staff are combined it may well be that a great enough strategist will be forthcoming, in the course of time, who can give the best solution of all—unity of command. If, in addition, the major parts of the Empire are represented, then we shall indeed be certain that any expansion which may be necessary for our security will be on right lines. Mutual understanding and mutual helpfulness are essential if the problems are to be solved to the common benefit.

A Special Combined Staff, such as that visualized in this article, would go far to reduce the duplication and overlap of our present departmental system, and its cost would be probably more than counter-balanced by reductions of other staff appointments which would then become redundant. Its scope will be wide, its usefulness undoubted, and as the servant of the Chief of Staff's Sub-Committee of the Committee of Imperial Defence it will have an unrestricted and unbiased outlook on sea, land, and sky.

¹ "Science of War," by Colonel G. F. B. Henderson, C.B.

AIR RECONNAISSANCE IN OPEN WARFARE

TWO INCIDENTS IN THE ADVANCE TO THE AISNE IN SEPTEMBER, 1914¹

By WING COMMANDER J. C. SLESSOR, M.C., *p.s.a.*

THE revised edition of Volume I of the British Official History—Military Operations France and Belgium, 1914, contains in considerable detail the information obtained by the Royal Flying Corps in the opening stages of the campaign. The accuracy and excellence of the information secured by the necessarily rather inexperienced observers of the first five squadrons may come as a surprise, though it may seem that the value of the information acquired was appreciated at the time rather more by our French Allies than by the Higher Command of the British Expeditionary Force. Brigadier-General Spears, who was an eye-witness of the famous interview at Melun on 5th September, 1914, between General Joffre and Field-Marshal Sir John French, has recorded² the generous tribute paid on that occasion by the French Commander-in-Chief to the British airmen: "he interrupted his narrative to say that the British Flying Corps had played a prominent, in fact a vital, part in watching and following this important movement [the change of direction of von Kluck's Army], on which so much depended. Thanks to our aviators, he had been kept accurately and constantly informed of von Kluck's movements. To them he owed the certainty which had enabled him to make his plans in good time." These are strong words. It may be that General Joffre had in mind the message telephoned to G.Q.G. on the evening of 3rd September by Colonel Huguet, which summarized with remarkable accuracy the situation of the German *First Army* at that time: "It results from very reliable reports from British airmen, all of which agree, that the whole of the German *First Army* except the *IV Reserve Corps* (that is to say, the *II, III* and *IV Corps* and *18th Division*) are moving South-East to cross the Marne between Château Thierry and La Ferté sous Jouarre, and attack the left of the Fifth Army. The heads of the columns will without doubt reach the Marne this evening." The late General Huguet could not be accused of an unreasoning admiration of British military capacity, but he evidently had a high opinion of

¹ Ref. Map France 1/250,000, Sheet 10, and sketch map p. 685.

² Spears, "Liaison, 1914," p. 416.

the efficiency of the R.F.C. And it was in some measure due to his unquestioning acceptance and too exact interpretation of a British air report that there arose an incident which has passed into history, and which seems worth recording as containing certain lessons in the handling of Intelligence generally, and of air reconnaissance in particular.

On the morning of 10th September, 1914, the advanced guards of the British I Corps were held up just North of the Clignon stream by small but boldly handled German rearguards. Of the 2nd Division, the 6th Infantry Brigade had a sharp action near the village of Hautevesnes, while on their right the 2nd Brigade of the 1st Division was held up just North of the village of Priez by opposition which was not finally cleared out of the way till well on in the afternoon. Meanwhile, according to the Official History (p. 362), "throughout this little action General Haig had been chafing to act on a message received about 9 a.m. from General Maud'huy of the French XVIII Corps, on his right, giving him intelligence that fifty-four German heavy guns were moving from Lizy-sur-Ourcq North-Eastward upon Oulchy and offering to co-operate in capturing them. As the heads of both the 1st and 2nd Divisions were sharply engaged at the moment, he could give no immediate orders; and the clouds were so low that later in the forenoon, when he asked for more exact indications from the Flying Corps, such observation as was possible gave no definite result. By 1 p.m. the German column was too far North to be intercepted."

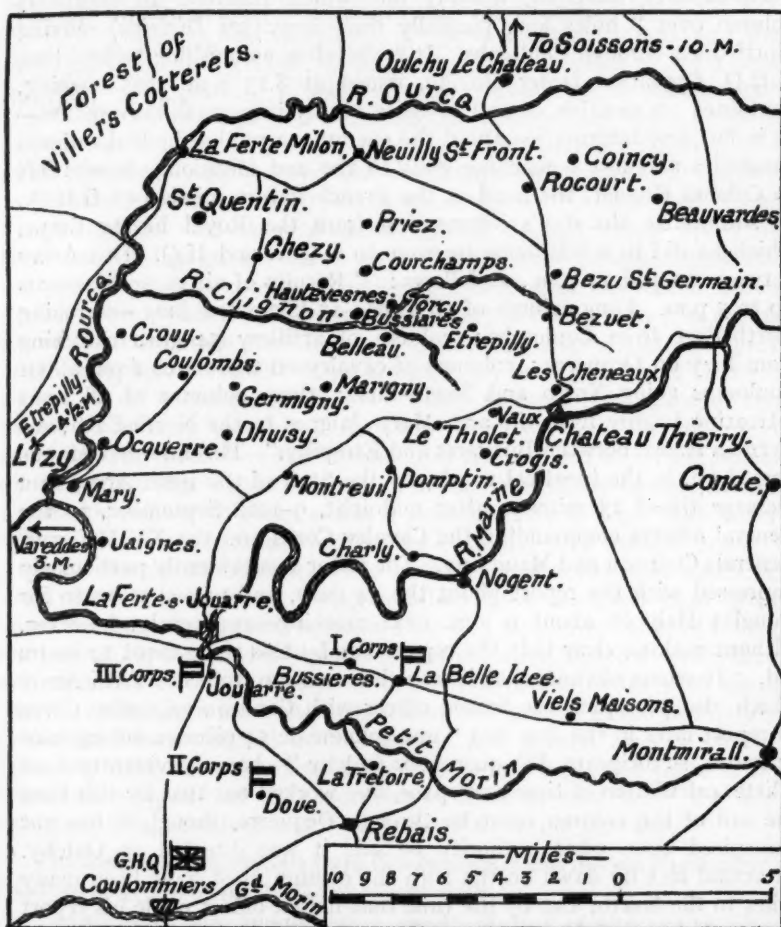
History does not relate whether this exciting bit of information was passed on by I Corps Staff to G.H.Q., or to II Corps or Gough's cavalry on their left, to whom it would seem to have been of very special interest, since this column of artillery was reported to be in the area into which they were advancing with practically no opposition. It seems at least certain that it was not repeated to the Intelligence Staff at G.H.Q., who might have been able to throw a different light on the report, which had evidently been accepted without question by Sir Douglas Haig. But to a reader of the account, long afterwards in the light of full knowledge of the events of that day, the report seems, on the face of it, open to suspicion. What was this enormous column of heavy artillery doing moving from Lizy-sur-Ourcq early in the morning of 10th September? At 10.40 a.m. on the previous morning von Linsingen's *Group of Divisions* on the left of the *First Army* had been ordered by von Kluck to fall back at once from opposite General Maunoury's right about Etrepilly and Vareddes and go "with flank protection via Coulombs in direction La Ferté-Milon-Neuilly St. Front." In fact, by dawn on the 10th the German *5th Division* and Marwitz's *Cavalry Divisions*, which were acting as a sort of left rearguard, were all in or to the North of the Clignon valley, while the next nearest division, the *3rd*, was about

5 miles further North, about Neuilly. It seemed, therefore, at least improbable that so important a column as 54 heavy guns, representing the bulk of the heavy artillery of two corps, should be left to its own devices about 8 miles behind the tail of the rearguards. Furthermore, no column answering to the description was seen either by the 5th Cavalry Brigade, whose left was in Germigny by about 6.30 a.m. on the 10th, or by the 5th Division, who marched up the road through Dhuisy and Germigny that morning to their billets about St. Quentin and Chezy, North of the Clignon stream.

Further consideration served only to deepen these suspicions. How was it that a bit of information about events on the extreme left of the British front should have reached Sir Douglas Haig from the French Corps Commander on his right? It seemed unlikely that the aviation of the French Fifth Army would have reconnoitred the valley of the Ourcq that morning. The French of course acquired good information from local inhabitants, but it seemed out of the question that information from this source could have reached General Maud'huy so soon. The report might have emanated from General Maunoury's Sixth Army, on our left, whose advanced troops were not far from Lizy that morning; but if the Sixth Army staff had obtained this information, whether from inhabitants or from their aviation, it seems highly improbable that they (or G.Q.G., to whom they would probably have reported it) would have passed it on to the French Fifth Army and not to the B.E.F., whom it obviously concerned. In fact, the whole story seemed rather improbable. It did not occur to anyone that a report received by a British Corps Commander from the French Commander on his flank could have originated with the British Flying Corps. Yet this is, in fact, what happened; and the report has been traced to its source mainly owing to the enthusiastic collaboration of Capitaine Labouchère, now of the Ecole Supérieure de la Guerre, whom many British officers will remember as the gallant French subaltern who was attached as interpreter to the British 1st Cavalry Brigade, and who fought with them at Néry on 1st September.

At 3.35 p.m. on 9th September Captains Grey and Boger, of No. 5 Squadron R.F.C., took off in an Avro from an advanced landing ground at Jouarre, just South of the Marne, to reconnoitre the area in front of the III Corps (some aircraft had been decentralized to Corps for the first time on 6th September). They were in the air until 5 p.m., when they landed again at Jouarre and reported personally to the III Corps Commander the results of their reconnaissance. Their report, of which a copy is reproduced herewith (Appendix A), was of great interest and gave unmistakable indications of the withdrawal of von Kluck's left

from opposite the French Sixth Army, West of the River Ourcq. Among other columns reported moving in a north-easterly direction from that river was one at 4 p.m. on the road Lizy-sur-Ourcq-Ocquerre, "equiva-



SKETCH MAP TO ILLUSTRATE THE EVENTS ON SEPT. 9th & 10th, 1914

lent of 3 brigades of artillery formed up by side of road and moving off in column of route going N.E. head at Ocquerre." Here was the origin of our 54 guns!

Grey and Boger's report was evidently communicated to G.H.Q., either by III Corps or, more probably, by Sir David Henderson, then

commanding the R.F.C. in the field, who would have been quick to appreciate its importance. Other air reports came in during the afternoon and evening, all telling the same story of a general retirement in a north-easterly direction, notably one which reported an enormous column over 8 miles long (actually the enemy *3rd Division*) moving North-East through Coulombs. It is therefore astonishing to find that G.H.Q. Operation Order No. 20, issued at 8.15 p.m. that evening, contained no mention of any of these vitally important movements—or in fact any information about the enemy except that he had suffered casualties and lost 8 machine guns to the 2nd Division. It was left to Colonel Huguet, the head of the French liaison mission at G.H.Q., to summarize the day's information from the Royal Flying Corps, which he did in a telephone message to G.Q.G. and H.Q. Fifth Army between 10 and 11 p.m., as follows: "Results of air reconnaissances up to 5 p.m. Long column of all arms—15 kilometres long—marching North-East from Coulombs; column of artillery 54 guns marching from Lizy on Ocquerre; columns of cavalry on the march from about Coulombs going North and North-East; three columns of all arms retreating hastily from the area Mary-Jaignes to the North-East; no German troops between Bussières and Etrepilly." This information was passed on, in the identical words, by the Staff of the Fifth Army in a message timed 15 minutes after midnight, 9–10th September, to the General officers commanding the Cavalry Corps and the XVIII Corps, Generals Conneau and Maud'huy. The latter was evidently particularly impressed with the report about the 54 guns, and passed it on to Sir Douglas Haig at about 9 a.m. next morning—apparently, however, without making clear that the report was by this time about 17 hours old. It seems obvious that it was this message from the Fifth Army which also prompted the liaison officer with Conneau's Cavalry Corps to report later in the day that "une colonne de 54 pièces a été signalée ce matin, se dirigeant d'Ocquerre sur Oulchy"—having evidently done a little calculation of time and space, and worked out that by this time the tail of the column must be through Ocquerre, though it has not transpired upon what authority he said it was directed on Oulchy. In actual fact by dawn on the 10th the column must have been many miles to the North, and by the time that liaison officer made his report was probably well North of the Ourcq, heading for the Aisne, never having been within several miles of Oulchy.

So that was the origin of those 54 guns. Boger reports having seen the equivalent of three brigades of artillery; Huguet, knowing that a British artillery brigade at War Establishment was 18 guns, with an almost embarrassing faith in the exactitude of the observer's report, does a little sum and passes it on to the Fifth Army as "54 canons";

and many years afterwards it duly goes down to history as 54 guns in Volume I of Military Operations, France and Belgium, 1914. We shall perhaps never know exactly what did comprise the column which Grey and Boger watched move off from Lizy that September afternoon. A curious thing is that somewhere between Huguet's report and the British Official History the word "heavy" has crept in—"Fifty-four German heavy guns." Brigadier-General Spears in his recollections of that day (*Liaison*, p. 453) mentions the incident, and refers to them as heavy guns; but Boger only used the word "artillery"; Huguet's report spoke of "canons," and that of the liaison officer with the cavalry as "pièces," both of which words mean simply "guns." It is not known whether the report from the XVIII Corps to Haig said that they were heavy guns. There appears no reason to doubt that the column did in fact consist of artillery, and it may have been heavy artillery; von Kluck did not take his heavy artillery with him on his forced marches from the Grand Morin to the Ourcq, but this may conceivably have been the corps artillery (5.9 hows.) of the *IV Reserve Corps*. It is, however, much more likely to have been some of the divisional artillery of the *3rd Division*, which withdrew by that road from the Ourcq front on the afternoon of the 9th and went into billets about Neuilly that night: a German divisional artillery comprised two regiments, each of 36 guns, and it is probably safe to guess that Boger saw one of these regiments. It is very easy and very natural to over-estimate the size of something seen in the heat of action, and anything more than one regiment would certainly have occupied more road space than the 2,700 yards between Lizy and Ocquerre. It is of course not impossible that, owing perhaps to bad visibility, Boger was mistaken and that the column was one of those transport convoys with small escorts, including a few guns, which were left behind in the precipitate retreat and were harried by the British and French cavalry on the following day. But 9th September was a fine day, and there is no reason to suppose that the observer was so badly mistaken; the first explanation is, therefore, much more likely to be the true one.

The lessons to be derived from this episode stand out for themselves, but it may be worth summarizing them briefly:—

- (a) First, the incident is a good example of the reason why nowadays in the Royal Air Force we insist on our observers reporting only exactly what they see in definite terms, avoiding anything in the way of deductions. To-day, an officer of an Army Co-operation Squadron seeing that column would be trained to report a column of artillery, approximately so many guns, moving North-East, head at Ocquerre, tail—wherever it was.

- (b) Secondly, it is an example of the dangers of taking an air report too literally. The position of the head and tail of a column, its nature—whether artillery, mounted troops or transport—the direction of movement and whether it is closed up or moving with wide intervals, these things can be stated definitely and accepted as accurate. But from these details the Staff must deduce the rest—whether it is a brigade or a whole divisional artillery, for instance; and any estimate which the pilot is able to give of numbers, whether of troops or guns or anything else, must and can only be taken as an approximate indication.
- (c) When some really important information of this nature comes down from the air, it is always advisable to get it confirmed at once, if necessary by sending out a special patrol. If it is possible also to confirm it by some other means, such as armoured cars or cavalry, obviously so much the better.¹
- (d) It seems hardly necessary to insist on the importance of keeping all subordinate commanders thoroughly informed of what the enemy is doing. Here was a mass of very reliable and vitally important information disclosing unmistakably a hurried retreat on the part of the enemy in front of the B.E.F. Yet none of it seems to have issued from G.H.Q. either in the form of intelligence summaries or the information paragraph in G.H.Q. orders. It is true that much of the information was obtained by aircraft working direct with corps, but that was not always passed on to other corps. G.H.Q. orders for the 10th were to continue the pursuit. The III Corps, on the left, were of course delayed in crossing the Marne at La Ferté sous Jouarre on the 9th; but it is unfortunate that, knowing what they did from their air observers of events on their immediate front, they should have been able to do no more on the 10th than the very limited and almost unopposed march of less than 12 miles. Sir Douglas Haig, however, on the right of the British line, apparently had little idea of the real situation on the Ourcq, and we know at least that at 9 a.m. on the 10th he was in ignorance of information which had been in the hands of G.H.Q. for over twelve hours.
- (e) Information in war, especially if it is of rather an unusual nature and coming from an unexpected source, is a gift

¹ See p. 691, par. 2.

horse which it is often safer to look in the mouth. There is a natural and human tendency to attach more value to a tit-bit of information coming from an outside source than to the more humdrum intelligence emanating from the usual channels. This is not to say that such information should be ignored; only that it should be accepted—not like manna from Heaven, but critically, and its reliability established before any important decisions are taken on it. I Corps staff on the 10th September, 1914, obviously and inevitably could not be expected to sift and scrutinize this bit of information in the way that we are able to do in the full light of knowledge after the event. But, even at the time, this report must have appeared improbable to a critical eye, especially if the Corps Staff had been kept supplied by G.H.Q. with the information to which they were entitled.

- (f) Finally, valuable information, even if it appears improbable, must immediately be passed on to the commander whom it may concern. The action of Colonel Huguet and of the Fifth Army Staff was a model in this respect. Even if both divisions had not been committed at the time, it was not for I Corps to act on this particular bit of information. Haig had his orders to continue the pursuit, and it is difficult to see how he could have deflected the march of his divisions diagonally across the front of the formations on his left. The formations obviously concerned were to some extent II Corps and Gough's Cavalry Brigades, but above all the III Corps, who were advancing on the roads within a few miles of where this column was reported. And the information should have been passed on to them at once and by the quickest possible means.

* * * * *

The mishandling of Captain Boger's reconnaissance report on 9th September did not, as it turned out, make very much difference. But on the same day, at the other end of the British line, an incident occurred in connection with air reconnaissance which had much more momentous results, and is worth describing here because it brings out several of the same lessons as those outlined above, and others in addition.

The Official History, summarizing the results of what it describes with truly official restraint as "a disappointing day for the British," says that "the I Corps, on the right, was halted for several hours on

account of a misleading air report that there were large enemy forces North of Château Thierry." Now, it is always nice to have someone to blame when things go wrong, but in this case the Official History is perhaps not quite fair to the airmen, as the following facts may show.

On the morning of 9th September, the heads of the 1st and 2nd Divisions, having crossed the Marne at Nogent and Charly, had advanced practically unopposed to a position just North and East of Dompnin, about 5 miles W.S.W. of Château Thierry, when at some time after 11 a.m. they received an order to stand fast. The reason for this order was a reconnaissance report from the Royal Flying Corps, which, according to the Official History (p. 333), "reported 'large hostile forces' at 8.30 a.m., both halted and marching, North of Château Thierry, and the bridge there intact. A further report at 12.30 p.m., however, put the force halted about four miles North of the town at only a division with a long column going North, and further small columns on roads to the East all going North. About 1½ battalions were seen near Montreuil, where there was 'artillery activity.' . . . The nearest troops of the French Fifth Army were seen at 7 a.m. near Viels Maisons (10 miles South of Château Thierry), moving North-East, that is away from the B.E.F. . . . No further advance was made by I Corps until 3 p.m., after two aeroplanes sent by General Haig had reported 'all clear' on the I Corps front, when, preceded by the cavalry, both divisions moved forward" about two miles to the line of the road Château Thierry-Montreuil, where "Sir John French, who had motored up to see General Haig, instructed him to stop the advance," and divisions went into billets for the night.

The inner history of these air reports and their results, though a little difficult to unravel from the available records, is interesting. At 10.40 a.m. on 9th September a message was received by I Corps Headquarters at La Belle Idée which had been despatched at 9.40 a.m. from II Corps at Doue, "G. 910. Aeroplane reports large force of enemy all arms collecting on the line Château Thierry-Marigny." Shortly afterwards, at 11.5 a.m., this was amplified by another message from the same source, timed 10.25 a.m.: "G. 914. Aeroplane report, timed 8.45 a.m. and dropped with 3 Div., states considerable force of all arms collecting behind the woods on the general line Château Thierry-Marigny, columns appear to be converging on Marigny and moving North North-East and North-West. This appears to be the report mentioned in my G.910." The originators of this report can only have been Captain Dawes and Lieutenant Crosbie of No. 2 Squadron, whose reconnaissance report is attached as Appendix B. This, of course, is the full written report which they made out on their return to the aerodrome at 11.20 a.m.; but the information contained therein

corresponds approximately—though not exactly—to that in the II Corps message No. G.914 ; indeed, they were the only patrol in the air at the time whose report bears any relation to this situation, and it is evident that they dropped a message on the 3rd Division on their way from Rocourt to Condé and Montmirail, giving this information—probably in the actual words quoted in the II Corps message. II Corps evidently repeated their message No. G.910 to G.H.Q. at Coulommiers, because at 11.15 a.m. a message was received by I Corps from G.H.Q., timed 10.40 a.m., passing on the information and ending with the following admonition, “C-in-C directs if not already there you will come up on right of 2nd Corps as early as possible keep your train South of Petit Morin.” As a matter of fact the heads of Sir Douglas Haig’s divisions were already a little in advance of the 3rd Division, on his left, and it may be that the cautious wording of G.H.Q.’s injunction suggested to him the course which he adopted. At 11.25 a.m. he sent an urgent message to Captain Waldron’s Flight of No. 2 Squadron, who were under his orders, to send out and verify the previous air report ; and shortly afterwards he ordered advanced guards to halt and reconnoitre and to get touch with the 3rd Division, reporting to G.H.Q. and II Corps at 11.50 a.m. that he had done so.

Unfortunately there is no trace in the R.F.C. records of any reconnaissance reports by Captain Waldron’s detachment that day. There is no doubt, however, that he did send out patrols in accordance with Sir Douglas Haig’s order ; and the report at 12.30 p.m. and the “two aeroplanes sent by General Haig” referred to in the Official History must have come from that flight. No doubt what happened was that the pilots on landing reported direct to Corps H.Q.—and very likely to the Corps Commander personally, as they sometimes did—and made out no written reports afterwards. Anyway, Sir Douglas Haig evidently satisfied himself that he could safely resume his advance, and the columns got on the move again at 3 p.m. The reports of Captain Waldron’s patrols were corroborated by a message received at 3.30 p.m. from General Allenby (despatched from H.Q. Cavalry Division, at Le Thiolet, at 1.45 p.m.) in reply to a request for confirmation of the original air report, which Haig had evidently sent them in the morning. This message stated “we cannot confirm the aeroplane reconnaissance. We have seen a large column of cavalry and wagons march North from Château Thierry, the rear of which passed Les Cheneaux about 10 a.m. . . . consider aeroplane has probably mistaken retiring cavalry *jäger* cyclists and convoy for concentration of all arms. There appears to be nothing to stop our advance. Please repeat G.H.Q.” The last part of this message was a remarkably accurate appreciation of what actually had happened. One may, however, imagine that Sir Douglas Haig had

an anxious moment when he read a report received at 3.5 p.m. from G.H.Q., timed 2.5 p.m., to say, "aviator reports 1.45 p.m. hostile force estimated one and a half corps assembled on line Bussiares-Torcy-Belleau-Etrepilly-Bezuet. Main masses between Torcy and Etrepilly." The originator of this report was Captain Pitcher, of No. 4 Squadron, who landed with Lieutenant Mapplebeck at Coulommiers at 1.15 p.m. and handed in the information contained in Appendix C. His report, though it would have been extremely valuable had it been adequately scrutinized and the information plotted on a map, did contain a very serious over-estimate of the strength of the enemy columns which he had seen; and it probably had no small influence in deciding Sir John French to put a premature stop to the day's advance.

Now, admittedly the first report was not a good one: "large forces" and "considerable forces of all arms" are vague expressions which might mean anything. But even so, was Sir Douglas Haig justified in halting his Corps merely on this report? The information given him in G.H.Q. orders the night before was that "the enemy are continuing their retreat northwards," and II Corps message No. G.914, as well as all subsequent air reports, contained indications that this information was correct. The orders from the Commander-in-Chief were to "continue the advance North to-morrow at 5 a.m., attacking rearguards of the enemy wherever met." If the enemy had "considerable forces of all arms," so had Sir Douglas Haig—his two divisions were supported on their left by another corps and two cavalry brigades, and were covered by a cavalry division on their right front. In actual fact the enemy forces seen by the airmen that morning consisted partly of the German *5th Cavalry Division* with its four battalions of *jägers*, which, having opposed our passage of the Petit Morin the day before, had rested in Marigny and Dompnin that night and retired on the 9th North-eastwards to Beuvardes ($7\frac{1}{2}$ miles North-East of Château Thierry); and partly of stragglers and transport convoys of the corps which had been rushed across to the Ourcq front a few days before. Sir Douglas Haig of course could not know that at the time; but his second air report at 12.30 p.m. put the enemy at only a division, and that already four miles North of Château Thierry, and retreating. Why, in view of his orders to attack enemy rearguards wherever met, did he consider it necessary to stand fast for another $2\frac{1}{2}$ hours until aircraft had reported all clear on his front?

The explanation would seem to be partly psychological, and partly that his information about the enemy was faulty and deficient; and the reason for the latter was largely that the air reconnaissance was badly directed, both on the 9th and during the previous vital days. On the psychological side it must be remembered that it was little over

a week since the interview in Paris, when Lord Kitchener had put an end to Sir John French's amazing intention to withdraw the B.E.F. from the line to refit and recuperate. But even the fresh instructions given to the Commander-in-Chief on that occasion, while telling him to remain conforming to the movements of the French Army, at the same time warned him to act with caution "to avoid being in any way unsupported on his flanks." Sir John French was still quite unwarrantably suspicious of French co-operation; he was still under the influence of his unfortunately worded initial instructions, and of his early and disastrous disagreements with General Lanrezac. And there is no doubt that the Commander-in-Chief's nervousness had communicated itself to the Commander of the I Corps. On the morning of the 9th Conneau's cavalry and the left of the Fifth Army were believed to be some miles away on Haig's right rear; and it is certain that the principal factor in determining him to halt was the fear that, in the event of an enemy counter-attack, the French on his right were too far back to support him in time.

The reasons for the faulty information about the enemy at the time are interesting. "Information derived from the French still showed incorrectly the German *III Corps* opposite the French North-East of Château Thierry, and the *VII Corps* behind it" (Official History, p. 341). Now, in fact, the *III Corps* was in action with Maunoury's Sixth Army on the Ourcq front, having disengaged from opposite Franchet d'Esperey on the 7th; while the *VII Corps* was split up, the *13th Division* being on the right of Bülow's Second Army, North-East of Montmirail, while the *14th* was in action with Foch in the marshes of St. Gond. The interesting point is this. The German *III* and *IX Corps*, having withdrawn from opposite the French Fifth Army on 7th September and halted for the night on the Marne between Château Thierry and La Ferté sous Jouarre, had marched off before dawn to join von Kluck and, on the morning of the 8th, were streaming along the roads North-westwards from the Marne to the Ourcq. But except for the *5th Division*, which marched from La Ferté sous Jouarre, and Kraewel's detachment of the *IXth Corps*, which was dropped about Montreuil to delay our advance, both of which were duly reported by our air observers, the line of march of these two corps was beyond the area ordered to be reconnoitred by the R.F.C., and so this vitally important movement remained unknown to G.H.Q.

Curiously enough, much the same thing had happened on 6th September, when the *II* and *IV Corps* were withdrawn from opposite the British to reinforce the threatened flank on the Ourcq. Throughout that morning both the divisions of the *II Corps* were marching North from the Grand Morin, West of Coulommiers, to Varedes and Lizy,

while the *IV Corps* was assembled about Rebais and Doue, which were all beyond the area reconnoitred by the R.F.C. until late in the afternoon. On both these occasions air reconnaissance to a depth even of fifteen miles ahead of our advanced guards must have disclosed these all-important enemy movements, and presented a very different picture of the situation to the British Commander-in-Chief. The B.E.F. was well provided with aircraft, having five squadrons to a force of five divisions and two cavalry divisions. It is true that a high proportion of the aeroplanes were often temporarily unserviceable; it is also true that the machines were primitive and engines unreliable; but the pilots and observers had shown in the previous three weeks what they could do when called upon; and even in 1914 the aeroplane travelled at a mile a minute, and they should certainly have been sent much deeper than they were. The reconnaissance pilot will go where the commander he is serving tells him to go. This failure to exploit to the full the tactical mobility of the most mobile arm is not unknown in peace exercises and manoeuvres—even to-day, twenty years later. On the morning of 9th September, 1914, a proper use of the aircraft available, preferably centralized under G.H.Q. control, to explore thoroughly the area within fifteen miles to the North of the Marne, might at least have given clear indications that in front of the B.E.F. and the left of the Fifth Army was a gap of more than twenty-five miles between Bülow's right, about Condé en Brie, and von Kluck's left, on the Ourcq, filled only by Kraewel's detachment, Marwitz's two rather disorganized cavalry divisions with some *jäger* battalions, and sundry columns of transport and stragglers. Actually on that day "most of the machines were, however, employed to discover the position of the heads of the British columns, and what was happening on the British right and left" (Official History, p. 333)—tasks which should have been done by motor-cycle despatch riders from the divisions, and by liaison officers with the French armies on our flanks.

When we went to war in 1914 we had of course no experience of handling aircraft in war, nor had we the excellent training manuals which we have to-day. But a lesson of modern application which can be drawn from these incidents is the responsibility of the General Staff or Air Staff, as the case may be, when a new weapon or type of weapon is introduced, for laying down, at least provisionally, the general lines on which it should be employed tactically, for the benefit of those junior commanders who have to use it.

That in outline is the story of the air reconnaissance on I Corps' front on the day of the passage of the Marne. It is strictly true to describe the reports on the morning of the 9th as "misleading." But where must the responsibility lie for the "disappointing" results of

9th September : with the young flying officers, whose reports, though faulty in some respects by our modern experienced standards, were not so bad, judged by the standard of training and experience in the first month of war ; or with the commanders, who had failed to make adequate use of an arm which had already proved its worth, and who halted a whole corps and a cavalry division for over three hours during the vital stages of a pursuit simply as the result of a misleading report from one young officer ?

Finally, the following comments suggest themselves :—

(a) The Royal Air Force Manual of Army Co-operation, dealing with the duties of Intelligence Liaison Officers, says : " The I.L.O. will go over the information obtained by each pilot on his return from patrol, asking questions as necessary. In this way he will probably often elicit items of information which would be missed by anything but a *viva voce* interrogation." The value of this interrogation is not always apparent in peace training, and is sometimes called in question. Intelligence liaison sections on modern lines did not, of course, exist in 1914 ; but it must be obvious that a personal interrogation of the observers on the morning of the 9th September over the map by a trained officer would have shown the situation in a different light. For instance, it would have elicited from Lieutenant Crosbie exactly what he meant by the expression " large force " (see Appendix B) ; what space they occupied on the ground ; where their flanks or head and tail were ; were they in close column, or with wide intervals ; what was their approximate composition ; were they preponderantly mounted troops or infantry ; what did he mean by " drawn up " ; were they merely halted by the roadside, or deployed in some sort of batt'e formation ?

(b) The existence of the Intelligence Liaison Section, however, does not absolve the General Staff at corps or divisional headquarters from the duty of scrutinizing and making deductions from reports received from the squadrons. Information coming from the air—or for that matter from any source—taken piecemeal, will often appear to be of little interest, and may sometimes be definitely misleading. It must always be carefully plotted on the map, collated with reports from other sources, and interpreted with common sense. Captain Pitcher's report, for instance (see Appendix C), was most valuable and circumstantial, and its only fault was a serious over-estimate of the strength of

the forces he had seen ; a few minutes' consideration over the map by a trained staff officer of such time-honoured facts as time and space, of the strength of a German division at the time, and the area that it must occupy on the ground, must have disclosed beyond a doubt that the forces observed about Belleau and Bezu St. Germain cannot have been anything approximating to three divisions.

- (c) Preconceived ideas are always dangerous in intelligence work. The incorrect estimate of the enemy dispositions prevalent on that day has already been noted ; and a rough sketch map in the archives of R.F.C. headquarters shows the German *III* and *VII Corps* North of Château Thierry. This suggests not only that G.H.Q. was quite prepared to accept the observer's report as literally true, but also that Captain Pitcher himself may have gone into the air fully expecting to find three or four enemy divisions in that area—a state of mind that must inevitably have influenced his estimate of what he saw. To-day the Manual lays down that “ the importance of the officer carrying out the reconnaissance being fully apprised of the military situation at the time cannot be too strongly emphasized ” ; but the consequent natural tendency to a preconceived idea must be guarded against by observers, and watched for by the intelligence staff who receive their reports.

- (d) The point about the training of observers already mentioned in (a) on p. 687 again is admirably illustrated by the air reports here under consideration, and needs no further emphasis.

- (e) This episode illustrates again the importance, already touched on, of headquarters keeping all subordinate commanders fully informed of the latest information from all sources. According to the Official History, Sir Douglas Haig on the morning of the 9th understood that at 7 a.m. the nearest French troops on his right were 10 miles South-South-East of him, and moving away from the B.E.F.¹ In point of fact, G.H.Q. by 11.30 a.m. were in a position to inform him, as a result of Lieutenant Crosbie's report (see Appendix B) that long columns of cavalry, which were almost certainly one of Conneau's divisions, had been seen soon after 9 a.m. entering Condé, about level with the heads of I Corps ; and that at about the same time long columns of all arms, which could only have been Maud'huy's XVIII Corps, were moving through Montmirail, not away from but parallel to the line of advance of the B.E.F.

¹ See p. 689.

APPENDIX A

No. of Recon- naissance	Date	Aeroplane		Squadron	Pilot	Observer	Ref. Map	Hour at which Reconnaissance commenced	Hour at which Reconnaissance concluded
		No.	Type						
194	9/9/14	638	Avro	5	Capt. Grey	Capt. Boger	1/8000	3.35	5 p.m.
TIME		PLACE			OBSERVATION				
3.30 p.m.	Jouarre.	Jouarre. La Ferté sous Jouarre. Lizy-sur-Ourcq-Occerre road. Crouy-sur-Ourcq-Coulombs			Equivalent of 3 brigades of Artillery formed up by side of road and moving off in column of route going N.E. head at Occerre. 1 mile motor vehicles entering town from S.E. Column of troops (? cavalry observation not decisive) and moving through town in N.N.E. direction length of column 2½ miles head at Hervilliers. Column of cavalry 1½ miles long going east head 1 mile east of Vendrest. (b) Column of troops (? infantry observation not decisive) halted on road with head at Dhuisy. (c) 1 cavalry brigade halted east of town formed up ready to move off and apparently prepared to move off N.N.E. (d) Led horses of 1 squadron of cavalry ringed up. All this area was carefully searched and no German troops could be found on it.				
3.32 p.m.	La Ferté sous Jouarre.								
4.0 p.m.	Lizy-sur-Ourcq-Occerre road.								
4.15 p.m.	Crouy-sur-Ourcq-Coulombs	Occerre-Vendrest-Dhuisy road			This report was delivered verbally to G.O.C. 3rd Army (Corps) personally at farmhouse South of Jouarre at 5 p.m.—9/9/14. (Signed) R. A. Boger, Capt.				
	Occerre-Vendrest-Dhuisy road								
	Montreuil								
4.35 p.m.	Chamouet	Area Lizy-sur-Ourcq-Cocherel-Rouget-La Ferté sous Jouarre-Changis-Jaignes-Lizy-sur-Ourcq.							
	Area Lizy-sur-Ourcq-Cocherel-Rouget-La								
	Ferté sous Jouarre-Changis-Jaignes-Lizy-sur-Ourcq.								
3.35-5 p.m.									

NOTES, 7/7/34.

- (a) Probably mostly belonging to the 3rd Division and II Corps troops.
 (b) Probably Divisional Cavalry 5th Division, or possibly elements of 9th Cavalry Division.
 (c) Part of the 5th Division.
 (d) A brigade of the 9th Cavalry Division.

J. C. S.

APPENDIX B.

No. of Recon- naissance	Date	Aeroplane Type	Squadron	Pilot	Observer	Ref. Map	Hour at which Recon- naissance commenced	Hour at which Recon- naissance concluded
187	9/9/14	R. A.	No. 2	Capt. Dawes	Lt. Crosbie	Paris 1/200000	8.0 a.m.	11.20 a.m.
OBSERVATION								
TIME	PLACE							
8.15 a.m.	Boissy (on Coulommiers-Rebais road)				(a)			
8.20 a.m.	Rebais							
8.22 a.m.	La Tretoire							
8.25 a.m.	Hondevilliers				(a)			
8.27 a.m.	$\frac{1}{2}$ mile S.E. of Pavant							
8.30 a.m.	Saulchery ($\frac{1}{4}$ mile N.W. of Charly-sur-Marne)							
8.35 a.m.	Château Thierry ($1\frac{1}{4}$ miles W. of town)				(c)			
8.37 a.m.	Château Thierry							
8.45 a.m.	Bezu St. Germain							
8.47 a.m.	Do.							
8.50 a.m.	Rocourt							
9.3 a.m.	Conde				(d)			
9.15 a.m.	Montmirail							
9.22 a.m.	South of triangle Montmirail, La Chapelle, Le Gault le Forêt.							
9.40 a.m.	(15 mins. S. of Montmirail.)				(f)			
	Having moved off map, saw 5 trains in large junction with steam up facing Northwards.							
	(In illd.) D. S. C.							

Large Bivouac North of the road. Transport, head entering town, tail at Les Granges. Large force of all arms drawn up and halted, head of force of all arms at La Tretoire, tail at Rebais. Force of all arms formed up N.E. and S.E. of cross-roads midway between Hondevilliers and Baseville. Very large force of all arms drawn up facing N.E. Tail of column of all arms, head at N. of Villiers-sur-Marne. Force of all arms curving N., tail at Pt. 1 mile S. of Hondevilliers head 2 miles N.E. of Charly-sur-Marne. (b)	Large force of all arms drawn up behind wood S. of C in Château Thierry. Also force of all arms on Dompnin-Château Thierry road with head at Vaux and tail by wood $\frac{1}{2}$ mile W. of Crozy (Crogis). Large force of all arms drawn up W. of Oulchay-Château Thierry road, S. of Pt. 224, another E. of road. Large force of all arms drawn up E. of road. Large force of all arms. Head at Rocourt tail at Just. Leaving Château Thierry. Small force of Infantry only. Moving E. Head at C of Coiney, tail at 2nd R in Rocourt. Mounted troops moving Northwards by three roads into Conde. (d) Length of each estimated as $1\frac{1}{2}$ miles long. Force halted observed on N. Bank of R. Marne at Jaulgonne. (e) Large force of all arms formed up S. of Forêt de Rouges Fosses. Large forces of all arms moving into town from La Chapelle, Le Gault, Le Forêt, Morsains and Montenil; deduced strength of each at least four miles long each. Large masses of all arms drawn up and moving on Montmirail by road.
(Signed) D. S. CROSBIE, Lieut., Observer.	

(Signed) D. S. CROSBIE, Lieut., Observer.

NOTES, 7/7/34.

- (a) The first five entries all refer to the B.E.F.
 (b) This was the British I Corps.
 (c) These five entries refer to the Germans.
 (d) This was Conneau's Cavalry—probably his 10th Cavalry Division, which reached Château Thierry in the evening.
 (e) This may either have been a German rearguard, or possibly an advanced patrol of Conneau's 10th Cavalry Division.
 (f) The last two entries refer to Maud'huy's XVIII Corps.

J. C. S.

APPENDIX C.

No. of Recon- naissance	Date	Aeroplane		Squadron	Pilot	Observer	Ref. Map	Hour at which Reconnaissance commenced	Hour at which Reconnaissance concluded
		No.	Type						
186	9/9/14	242	R.A.	4	Lt. Mapplebeck	Capt. Pitcher	Meaux 1/80000	11.50 a.m.	1.15 p.m.
OBSERVATION									
PLACE									
TIME									
11.50 a.m.	Coulommiers .	.	.	.	.	.	Left aerodrome. About $\frac{1}{2}$ battalion round village with about 1 battalion reaching along about $\frac{1}{2}$ mile on the road to Marigny. (a)		
12.10 p.m.	Montreuil aux Lions	.	.	.	.	.
12.15 p.m.	Bussiares .	.	.	.	.	.	A large amount of transport closely parked on a square formation of about $\frac{1}{2}$ mile sides on W. of village. 21 aeroplane tents and a good deal more transport on E. of village. Nearly all motor transport. About $\frac{1}{2}$ battalion of troops with them.		
12.18 p.m.	Belleau .	.	.	.	.	.	About two (2) divisions of troops drawn up in assembly formation round village and between Belleau and Etrepilly with a small column proceeding along the road to Bonnes, tail in Belleau, head about $\frac{1}{2}$ mile further N. Another column on the Etrepilly-Château Thierry road moving N. Head Etrepilly, tail $1\frac{1}{2}$ miles out of Château Thierry.		
12.45 p.m.	Bezu-St. Germain Château Thierry	.	.	.	.	.	About 1 Division in assembly formation $\frac{1}{2}$ mile S. of village. Column on main Bezu-Château Thierry road. Head $1\frac{1}{2}$ miles S. of Bezu, tail $\frac{1}{2}$ mile N. of Château Thierry. Also further small columns on side roads on the E. of the main Bezu road each about $\frac{1}{2}$ mile long and all moving N.		
12.55 p.m.	Bonneil .	.	.	.	.	.	All bridges over river intact. Saw no one crossing them. About two brigades moving across the fields in battle formation on a line joining Dompnin and Bonneil. (b)		
1.00 p.m.	Charly .	.	.	.	.	.	About 2 Brigades N. of town. Also thick column of troops just finishing crossing bridge. (c)		
1.5 p.m.	Basseville .	.	.	.	.	.	Various bodies of troops seen round here but assumed to be our own troops.		
							(Signed) D. PITCHER, Captain, Observer.		

NOTES, 7/7/34.

(a) This was Krauel's detachment of the German IX Corps, who opposed the advance of our 5th Division on the morning of the 9th.

(b) These must have been the advanced guards of our I Corps.

(c) This was our 2nd Division.

J. C. S.

MODERN AIR RECONNAISSANCE THE IMPORTANCE OF UNITY OF COMMAND

(Being a summary of an article, by General Armengaud, published in the *Revue Militaire Française*, No. 154, for April, 1934.)¹

DURING the Great War the aeroplane became the main instrument of reconnaissance, and far more often than not proved adequate to its task. It has to be remembered, however, that it was only during 1914 that it was employed in mobile operations; and it was only after June, 1918, that warfare again became semi-mobile.

A careful analysis of the work performed by aircraft during these two periods reveals two facts:—

- (a) The outstanding value of the information they obtained;
- (b) The greater powers of observation of aircraft in the service of the defence and of the counter-offensive than in that of the attack.

It was, moreover, often found that aircraft were very often the only sure method of acquiring intelligence in sufficient time to admit of it being of any use for the formulation of a plan of action. By revealing what the opposing force consisted of, where it was at a particular moment, and how it was distributed, aerial reconnaissance enabled a commander to probe the enemy's intentions by reasoning according to the "method of probabilities." This is very much what actually happened before the Battle of the Marne.

Indeed, aircraft were always better able to discover the enemy's forces when in movement, or even at the halt before they had been able to conceal their dispositions. As a general rule, the side engaged in any large offensive movement was unable to effect a surprise owing to the work of the hostile aviators. On the other hand, the side attacked would usually be given sufficient warning to organize some counter-stroke against the impending blow. This amounted to a complete negation of the German theory of battle evolved in 1870, whereby it became accepted as an axiom that the offensive was the only road to

¹ This article may be regarded as a sequel to former articles by the same author. See R.U.S.I. JOURNAL for August, 1932, p. 569, and for May, 1934, p. 331.

victory. The same applies to the French doctrine of the offensive *d'outrance* which had been adopted before the Great War. The aeroplane became a species of guardian angel to the object of attack.

Will this still be the case in the future?

Space and time remain the two essential factors in any strategic manoeuvre. As the mobility of armies increases and the technique of battle develops on present lines, any theatre of operations will largely extend in depth. Rapid transport of troops reduces the time spent in the distribution of forces; the use of armoured vehicles still further diminishes their time of transit. These two facts must enhance the value of aircraft in reconnaissance: a state of affairs which can only redound to the advantage of a belligerent threatened by a strategic deployment such as that used against France in 1914. It is, therefore, essential that France should perfect to the highest possible degree her Army of the Air so that it may repeat the work that the French air forces¹ performed before the Battle of the Marne in 1914. Can it do so? Will not future air forces encounter far greater obstacles than they did in 1914?

Heavier infantry and cavalry formations will not have changed much since 1914, but the motorized columns will be far more difficult to locate and to observe. On the other hand, their increase of speed and of fire power can only be secured at the cost of larger supply columns for fuel and ammunition. The indications of extensive troop movements will not grow less, although more precautions will be taken for their concealment. Then there remains the whole question of anti-aircraft defence, which may be infinitely more potent than in 1914—although its effect might possibly not be as great.

On the other hand, the aeroplane has developed greatly, and to-day is more capable of performing its tasks than it was in the Great War. It is therefore necessary to analyse its present qualities in greater detail.

EFFICIENCY OF AERIAL RECONNAISSANCE.

The art of employing aircraft to the best advantage for reconnaissance purposes is the business of the commander of the air units. But the success of his work will depend very largely on the high command of the ground forces, which must be entrusted with the selection of the main objective in view and of the broad questions to which the airmen are expected to reply. It is, in short, a joint task: the "ground" commander must outline the general mission of the aircraft in any

¹ . . . and of the British Flying Corps. See this number of the JOURNAL, p. 682.—EDITOR.

specified strategic situation, and, taking into consideration their capabilities, he must cause the air forces to be set to work along the main lines of the proposed reconnaissance—a most important duty. An instance of a failure to grasp this principle is to be found in the work of the French aviators on 14th August, 1914: insufficient importance was attached to reconnaissance over the Belgian Ardennes, with the result that the high command acquired an entirely erroneous idea of the scale of the German turning movement.¹

The high command, moreover, must also consider the *depth* to which reconnaissances must be pushed, so as to divide the task as between the aerial units belonging to ground formations and those which belong to the Army of the Air. An illustration of the issue at stake is found in the following incident: von Kluck in August, 1914, by shutting his eyes to the possible threat from Paris and concentrating on his pursuit, was laying himself open to defeat. An army of the air should have reconnoitred towards Paris. The French high command, on the other hand, by assigning too many tactical missions to the aircraft, somewhat neglected the strategic aspect of their problem. It thus lost the opportunity of learning the effect of the demolitions effected during the retreat; it never realized the extent to which these had paralysed the capacity of the Germans to move their troops in a lateral direction. In contrast to this neglect must be set the advantages derived from the effective allotment of tasks set to the air forces in June–July, 1918—though only after the earlier German surprises in March and May.

The duty of the high command must therefore be to allot tasks to the aircraft—

- (a) With precision, so that they may be readily comprehended;
- (b) With elasticity, so that they can be adapted to an unstable situation;
- (c) With a simplicity compatible with the speed of the aircraft.

In order to obtain these results there are certain rules to be observed:—

- (1) Full instructions must be given to the aircraft commander as to the information desired and as to possible eventualities—all to be set out in a perfectly impartial spirit;

¹ Only fifteen reconnaissances were sent out to the North-East—five over southern Luxembourg and Lorraine, seven over Belgian Luxembourg, and three along the railways North of Luxembourg. No attention was paid to the size of the area, its wooded nature, or to the normally bad visibility prevalent over the area.

- (2) Explanation of the information needed must include—its relative value ; probable lines of search ; which primary objectives may yield best results ;
- (3) Secondary problems must be eliminated as soon as first results warrant such action ;
- (4) The means at hand must be adapted to the attainment of the objective ;
- (5) It must be decided what degree of contact is to be maintained with aerial commanders before taking important decisions.

MODERN AIRCRAFT IN RECONNAISSANCE.

Range.—The speed of modern aircraft being about 180 m.p.h., when carrying fuel for $2\frac{1}{2}$ to 3 hours' flight, the maximum range from home must not exceed 180 miles ; in any case, information beyond that distance can scarcely affect the high command.

Mobility.—The mobility of ground establishments is growing, and can be increased if aerial transport of stores is employed ; mobility should thus be adequate for all tasks.

Continuity.—Continuity of reconnaissance was often faulty in 1914 ; as it was in March, 1918. To-day this requirement is even more important, with motorized units capable of moving as much as 100 miles per day. Bad weather is of less importance than of old.

Frequency.—In 1914 the frequency of reconnaissance, particularly before 19th August, was quite inadequate. Under present conditions this need of frequency is growing rapidly, although it will vary according to conditions. Hence the need of a reserve to reinforce aerial units when and where necessary. In such cases the main body of the Army of the Air can also reinforce the reconnaissance carried out by ground formations.

Precision.—It is even more necessary than of old that information should be precise. Careful distribution of zones, the use of photography and wireless telegraphy should assist in this.

Night Work.—Navigational aids and illuminating devices must and can develop night work. This is largely a matter of technical improvement.

Observation by Agents.—The practice of dropping uniformed or secret agents by night or in fog is likely to be carried on increasingly. The information thus acquired will be communicated by pigeons or wireless telegraphy.

ANTI-AIRCRAFT DEFENCES.

Single-seater fighters, A.A. guns and machine guns and balloon aprons are the main forms of A.A. defence. Their relative values differ widely by day and by night.

By Night.—In the zone of the armies attack of reconnaissance aircraft by fighters must at present be regarded as exceptional: the same principle holds good of balloon aprons. In field operations A.A. artillery is not likely to be found in large numbers at the spots where information is being sought. For such purposes, consequently, civilian aircraft seem to be adequate and should be employed in preference to combatant aeroplanes.

By Day.—The obstacles offered by A.A. defences vary in importance, according to the state of the sky, just like the variation of open or covered terrain on the ground. Let us then take the case of a clear sky as being the more difficult.

Aerial reconnaissances will probably be carried out at heights out of range of lighter automatic weapons or guns. Individually, or even in threes, aircraft do not offer appreciable targets. The best procedure is movement in irregular lines and at speed. The fighter is the main enemy. In the late War, fighters drove the reconnoitring aeroplanes to such heights that observation was hampered or visibility was imperfect. If the latter flew lower they were so disturbed by the fighters that their work became faulty. In 1918 distant reconnaissance was carried out by groups of aircraft which, if molested, employed cross fire to ward off the attack. Even so their losses proved appreciable.

To-day fighters are less numerous than in 1918, but their quality has improved. The remedy lies in improving the armament of reconnaissance aircraft. The answer to this armament will be the attack of the multi-seater reconnaissance aircraft by a larger number of fighters; the multi-seater can thus be defeated. It is, therefore, absurd to suppose that it will be possible to send isolated reconnaissance aeroplanes into a clear sky far over the enemy's area unless they have a speed equal to that of the hostile fighters. The advent of a very fast two-seater fighter may eventually render it possible to maintain air superiority further forward over the enemy's area; but that has not yet been achieved.

Where the enemy maintains a screen of fighters in the air—and that he will infallibly do wherever he wishes to prevent reconnaissance—an aerial combat will take place and reconnaissance will need to be carried out by a formation in order to succeed in its mission. Where no enemy patrol is kept in the air, corps aircraft may stand a good chance of succeeding if not pushed more than 25 miles beyond the enemy's

line—assuming that aircraft of a minimum speed of 180 m.p.h. are employed. But the necessity for employing formations must eventually hamper the useful reconnoitring work of air forces. Corps aircraft can be reinforced by army aeroplanes ; but how about the army in that case ? It is not likely that G.H.Q. will spare many aircraft to armies ; G.H.Q. must then fall back on the Army of the Air, i.e., the independent air force.

RECONNAISSANCE BY THE ARMY OF THE AIR.

It seems, therefore, that it will fall to the commander of the Army of the Air to acquire all distant information, by whomsoever it may be needed. The equipment of that Army must, therefore, be appropriate to the task, and the selection of its machines must be guided by consideration of unity of action and of responsibility as well as of economy of means.

But the Army of the Air also needs its own means of reconnaissance just as much as any ground force. Distant reconnaissance of the enemy is an essential preliminary to its success. So we see that distant reconnaissance of all kinds must inevitably be the responsibility of the Army of the Air—and of it alone. It would be extremely hazardous to duplicate this work in any way. The means for performing it are too precious to be squandered. The main body of the Army of the Air can, of course, be distributed on the same plan as a group of ground armies ; it will thus be better able to carry out its tasks of reconnaissance. That is, it may be *organically sub-divided, but never split up*.

Nevertheless it still needs certain squadrons, detailed and equipped to provide its own means for carrying out distant reconnaissance. These aircraft must possess a speed at least equal to that of the single-seater fighter. On technical grounds alone it is claimed that such aeroplanes can be built ; and owing to the small number required, at any rate for many years, they should be easy to replace.

Thus we see that the commander of the Army of the Air will be in a position to supply the information on which the manœuvre of the ground forces will be based.

THE HIGH COMMAND.

In formulating his plan for the opening battle of a campaign a commander-in-chief will be faced by formidable unknown quantities, yet he must make his decisions without any undue delay. These unknowns will be :—

- (a) The effective scale of the enemy's manœuvre ;

- (b) The main line of advance of the enemy—which doubtless will be followed by troops organized in the most modern fashion so as to pierce any delaying forces and upset the incomplete mobilization of the main army ;
- (c) The probable time of the main encounter as far as may be judged by the enemy's advantages in readiness and in speed of manœuvre.

He will be called upon to solve these problems, not within ten days as in 1914, but perhaps at the very outbreak of hostilities. The correct solution can only depend on the Army of the Air.

What then is to be done to render the Army of the Air equal to such a task ? There is the question of finance and the question of organization. Finance must provide the multi-seater fighter which is necessary for this particular work. By reorganization we must deal with the question of the re-allotment of the aircraft required by corps and armies, as well as the number of aeroplanes available to reinforce all these units. We must first find the supplementary squadrons needed for night reconnaissance, and out of the first-line squadrons thus released we must form the new units needed for distant reconnaissance.

Above all, in order to obtain the utmost advantage from reconnaissance we must seek an organization of the high command which will secure continuous observation of the enemy by the Army of the Air. This object, it seems, can be attained by one, and only one, certain system ; that is, the joint high command of the aerial and ground forces. Failing such conditions the distant reconnaissance of the Army of the Air may end in failure : a fact which appears to-day to be pregnant of dire consequences.

TRADITION IN SEAMANSHIP

By LIEUTENANT G. M. BENNETT, R.N.

BECAUSE our Service is of the sea, much of our naval tradition is carried on from generation to generation by innumerable practices which enter into everyday life afloat, and which come under the general heading of Seamanship. An old Seamanship Manual¹ which the author was recently perusing recalled how very many of these practices are a hundred years old and more. Some quotations from it may be of interest.

The Manual is mostly concerned with the rigging of sailing ships, and of how to handle them under all conditions ; but it also deals with many other subjects, such as ship construction, steam-engines, water and air, and ordnance ; whilst it is obviously dated by such remarks as :—

“ Iron ships of the same external dimensions as wooden are both lighter and stronger, and consequently have more space for cargo. Their original cost is less, but their comparative durability is not yet decided.”

Of obstructions to be overcome after a ship is launched, and before she has the freedom of the sea, it is noted that :—

“ Besides the construction of the ship, and the formation of the places whereon she may be built, there are frequently many difficulties to be surmounted before the fruit of all this labour is freely clear of the ground. For example a river too shallow for even the lightest draught of the vessel, has to be navigated ; a shifting sand, or newly formed bank, to be crossed ; and even in some cases (as in Russia), ships must be borne bodily on ‘ camels,’ which, being first filled with water, are secured to the ship’s side, and then pumped out.”

In 1801, the Dutch frigate “ Ambuscade,” carrying a press of sail

¹ The “ Naval Cadet’s Manual,” by Boyd, published in 1857. This was a semi-official work dedicated to the Lords Commissioners of the Admiralty, who “ were pleased to express a judgment that the pages laid before them were calculated to be useful . . . and to evince their favourable opinion in the strongest manner in their power, by voting a sum of money towards the publication of the work.”

with the wind right aft, "*imperceptibly* shipped so much water through the hawse holes, as to go down suddenly when near the Great Nore." The details of how this vessel was salvaged are given as "not only an account of the means used to restore the ship, but likewise to point out to young officers to what advantages the qualities of perseverance and forethought may be applied, if duly cultivated in early life."

An example of how the instinct of the true seaman tells him when something is amiss with his ship relates to the trials between the "Barham" and "Vernon." "The Captain, on coming on deck, after a very short absence, exclaimed that there was something wrong. It proved that a 5-inch hawser had been in the interval reeled up near the bowsprit. On another occasion, when both ships were sailing abreast on the wind, and neither gaining, the men who were lying on the deck near the mainmast were caused to stand up, and instantly the 'Barham' moved ahead."

The value of music as an inspiration to effort is well appreciated in the following :—

"The principal moving powers are the force of men and animals, the action of water and of wind, and the elastic force of metals when formed as springs." The sailor studies them "so that when we can have a choice in the mode of application, it behoves us to consider how to place our men at their work."

"By the term 'useful effect' is meant the degree of force which a man *or brute* can maintain throughout a working day."

"One power, so important as to deserve the name of a prime mover, must not be forgotten, and that is the fiddler; but for work which is intermittent, such as anchor work, to be a good one, he must have graduated at the bars, else he will not understand how to keep step or modify and excite pace."

The present-day copper strip lightning conductors were formerly made of wire rope or chain, but "it has been proved that the electric fluid will invariably select for itself the line of shortest conduction offered by the best conductors. For instance in lowering the masts, the bights were frequently left hanging slack, and a seaman, happening to be in contact at the moment of action, became the shortest course."

Concerning the rival merits of various types of anchors, "the truth is that no one kind of anchor can have its merits endorsed by a committee however sagacious, and a bad sailor will be like the bad reaper; for the best anchor will fail if it be let go without care, or remain at the bottom without attention."

"Guns are a resource when without anchors. Haul the cable from

the hawse-hole and lash it to a certain number of guns round the chase . . . heave all overboard together."

Regarding the art of provisioning ship the Manual remarks :—

"A press of work such as this, unavoidably affords opportunity for treachery ; and as in the early history of a ship there are always some who are more skilful with a gimlet and piece of straw, than with a marling spike and piece of rope, spirit casks should be struck down in the spirit room without a moment's delay."

"In ships where the bread-room has been made a mess-place, and the fore store-rooms a lounging place for idlers, the natural consequences have been foul air, dirt and danger. From such cause the 'X——' was twice on fire during one commission."

All the mysteries of naval ordnance are compressed into nineteen pages. But then how simple it was :—

"The angle of Dispart¹ is that number of degrees which the axis of the bore would point above the object aimed at, when laid by the surface of the gun."

"The Sights are two notches cut on the upper part of the base ring and swell of the muzzle."

Other notations, many showing great understanding of the human element, are as follows :—

"The guard and quarter-masters are best disposed of in the wings, or anywhere out of the gangways ; so that should the deck be cleared early, those men who have had night watches may not be disturbed."

"What a cabin is to an officer, a resting place for his bag and diddy [*sic*] box is to a man."

"Ten minutes expended in shifting to working dress for a press of work, will be caught up before an hour is over. All that men call elbow-grease is in the jumpers."

"On Sundays it is well to let the men, if in white, bring their blue frocks to muster, as it frequently becomes cold during church."

"The first halves of the port watch wear one stripe on the left arm, and the second two. The first halves of the starboard watch wear one stripe on the right arm, and the second two."

"All Petty Officers are supplied with lists of their men, and may be trusted to muster them during the day ; but at night the most approved practice is for the officers of watches to be called before the hour of relief, so as to be on deck in good time to muster their own

¹ Surely "Dip" was born out of "Dispart."

watch. Thus we have an entire and sober watch constantly on deck, and until a happier experience proves that squalls will not take us aback, or another ship run into us because it is 'eight bells,' we cannot afford to be less exacting."

"We make it generally known that *the work must be done* is a law to which everything must give way."

"Boatswain's mates acquire, if permitted, a drowsy manner of groaning over a treble bass solo: and often the chance is lost before they have arrived at the end of the gamut."

"The indefinite quantity 'after' or 'fore' part of the ship is prolific of complaints, for, when used, there will always be claimants for neutral ground."

"The right management of men is difficult under any circumstances, but specially so in such an artificial world as a ship. The interference of the executive must be constant, it must be vigorous, and to be tolerable, it must be judicious. Unless the executive be in sympathy with the men, the ship will not be 'all alive.'"¹

"The ventilation is a subject which requires constant attention, for the violent fits of coughing and feverish symptoms exhibited by strong men when called up at night, show what a foul atmosphere the lower deck may produce."

"The subject of the observation of the Lord's Day cannot be considered irrelevant to that of discipline, when it is recollected how strongly it is insisted on in the Articles of War, not simply as a Christian Duty but as tending to good morals and right conduct. But all care should be taken to bring the men together unexhausted by previous labour, and to render the service as pointed and arresting as possible. Many a routine commences with an order to prepare at 3.30 a.m. on Sunday to stone decks, and assigns a particular duty for nearly every ten minutes from 4.0 a.m., when having gone through the fatigues of the decks, side, copper, paintwork, guns, arms, yards, awnings shifting, and stowing, the wearied people are ordered up for church about the time that preparations are making for dinner."

"The fog signal for starboard tack is horns and drums, and for the port tack, bells."

"Happily the mere harbour order, which once obtained to the extent of unreeving rope, hiding necessary gear in the tiers, and then

¹ To which remark the Manual adds a quotation from Cornwallis' dispatches: "I wish popularity, but it is that popularity which follows, not that which is after: it is that popularity which sooner or later never fails to do justice to the pursuit of noble ends by noble means."

making a display of brazen and gilded finery, which involved every sailor in a hat full of greasy brass rags, has become obsolete. Nothing that is needful is now considered unsightly."

When proceeding out of harbour "tidy the ship up, so that from the water-line to the trucks, criticism may be defied, and everyone concerned be as proud of her, as if the romance of sea life was not about to be buried in the coal bunkers."¹

Of boat work the Manual says:—

"Remember that a laden boat carries her way longer than a light one, therefore shorten sail or *unrow* in good time."

"There is another way of doing all this. The officer steps into his boat without a clear understanding of orders, or the least consideration for his crew. 'Shove off,' 'Hoist away.' Everybody stands up or sits on the gunwhale, and 'carries on'; the mizzen is up first; the boat comes nearly head to wind, and goes chopping astern; the officer puts the tiller the wrong way; the foresail is hoisted all aback, and the boat tilted over to windward. Someone who has got an oar out on that side to pull her head round, 'catches a crab'; she comes round; the sail binds against the mast, and will not come down; there is no downhaul; and if not upset, the crew contrive to gather the sail into the boat by hand. At length, her head is pointed the right way, the sails are hoisted, and the sheets are hauled aft simultaneously, and are, of course, badly set. So much leeway has been made, that it is not possible to weather the nearest ship; and if there is not a 'run-foul,' the boat bears up, and runs further to leeward, or else the sails are lowered, and the oars are got out. At length they get away under sail. It freshens; the officer has got a foolish notion that it is proper to 'crack-on,' and, moreover, he has a 'water-proof,' and can afford to be indifferent about wetting his men. The boat is dragging on her side, the crew are sitting on the thwarts, and much more leeway is made than if the boat was more upright; at length a reef is ordered without any preparation. All hands stand up, and snatch at the foot of the sail through the lee gunwhale, and the nominal officer resigns his command to that cherub, whose particular duty is to 'look-out' for the natural consequences."

"Hailing or interchanging hails with the gunroom, on passing astern, is improper."

"When you go on duty to another ship, return to your boat the moment that you have delivered your message, and wait orders. A careless officer goes below; his boat's crew block up the gangway,

¹ Thanks to the strength of our traditions, this romance has not yet been drowned in the oil fuel tanks.—AUTHOR.

commence conversing through the ports, are disrespectful to strange officers, and bring a bad name on their own ship."

"You will get your boat under a low bridge, or under a weight that cannot be raised high enough to clear the gunnel [*sic*], by taking the plug out."

The following obviously refers to the days before mooring swivels came into fashion :—

"The state of the hawse may be known by fixing two pieces of silk thread to the compass card in the direction of the anchors, and fastening their ends to some place above it : for, for every turn in the cables, there will be found a corresponding one in the threads."

Concerning administration and command, the Manual remarks :—

"In the government of the peopled deck there is scope for administrative talent of the highest order. To be prompt with the right command, judicious in the solution of sufficient means (and no more), in the control of reserves, in the anticipation of the next move, in the adaptation of resources to various circumstances,—all this cannot be learned in any other school than our 'under canvas,' or by any other pupil than a cordial lover of his profession."

A note from Collingwood's letters : "The difference I observe in the expense of sailing the ships is incredible. Some men, who have the foresight to discern what our first difficulty will be, support and provide their ships by enchantment, one scarce knows how ; while others, less provident, would exhaust a dockyard and still be in want."

Officers of the watch are admonished that :—

"In every evolution 'in succession,' the eye of the Chief is on each performer as he goes round, and when, after a bad one, he asks for the name of the officer of the watch, the query is generally followed by an invitation to the flagship,—not to dinner."

"When appearances are very threatening, and it is difficult to say from which quarter the storm will break, the wise course to pursue is to clue everything up—and the officer of the watch must not always take it for granted that *somebody* is looking after scuttles and lower-deck ports."

At the time this Manual was published separate squadrons in a fleet were still designated Red, White and Blue. "The different divisions and squadrons in a fleet have each their own distinguishing flag, and communications are maintained by combination of signal flags and sounds, produced by ringing bells, blowing horns, beating drums, and firing guns"—which can only lead one to suppose that

ships when in company were in a perpetual state of pandemonium due to the activities of the V/S. branch !

A comparison is made of the art of the soldier with that of the seaman :—

“ The military art may, in a great measure, be reduced to rules. It is almost a certainty that an order will produce certain results. The commander moves his pieces with nearly the precision of a chess-player. He literally can say to a man ‘ Do this, and he doeth it.’ At the note of a bugle, columns form line, consolidate in masses, or deploy into fractions ; a battle is declined, or an inevitable disaster is converted by successful generalship into an honourable retreat.

“ But the seaman is dependent on two uncompromising agents ; and, however he may accommodate his circumstances to their movements, over them he has no positive control. Britannia may rule the waves in song, but as the sea-sick dominie observed, ‘ She cannot rule them straight.’ Tides, seas, and winds will rise and fall, and wait for no man. The seaman must take them as they come, and be ready with his resources. A shift of wind threw three of thirteen ships out of the brunt of the battle of the Nile. Fogs and calms obscured the signals and retarded the movements of Howe. A gale scattered the hard-won trophies of Trafalgar, and prevented the entire destruction of the enemy ; and it was in the full conviction of the impossibility of adhering rigidly to fixed rules, that the genius of Nelson threw himself so trustfully on the bravery of his men and the undirected ability of his captains.

“ These observations are not made with the intention of drawing an invidious comparison, but to magnify our own profession in the estimation of young sea officers ; so that they may take a large estimate of the qualifications for command. If the wooden walls be made up of ‘ Hearts of Oak ’ the ‘ thin Red line ’ is composed of material as precious ; and soldiers and sailors can entertain no rivalry that is not of a friendly and honourable character.”

Boyd’s “ Naval Cadet’s Manual ” was the forerunner of the late Admiral Craddock’s “ Whispers from the Fleet.” With the passage of years the former great work has, alas ! found a resting place on the topmost bookshelf, while the latter is hardly known to the younger generation of officers. Dare one hope that some officer will before long give to the Navy a new seamanship manual which will contain something more than the dry details of an official publication ; something which will remind us of Tradition in Seamanship ?

A DEFENCE OF CLOSE-ORDER DRILL : A REPLY TO "MODERN INFANTRY DISCIPLINE"

By MAJOR M. K. WARDLE, D.S.O., M.C., The Leicestershire
Regiment.

IN "Modern Infantry Discipline," in the last number of the JOURNAL,¹ "A Field Officer" argues with such an air of sweet reasonableness that his kindly strictures upon us reactionary pedants, who believe in close-order drill for our infantry, seem moderate and restrained. If his arguments are sound, we surely deserve far harsher treatment. But, though much that he writes is true enough, and some of it admirable, his main arguments are based on a collection of so many fallacies that one hardly knows where to begin attacking them. Let us, however, enumerate a few of them in the order in which they occur, before giving our own views on the value of close-order drill.

Throughout the whole of his article "A Field Officer" appears to labour under a general confusion of the great fundamental task of making the soldier's soul, if one may use the expression, of turning the civilian into the sort of man we need in the infantry, with the particularized task of teaching him how to fight, of teaching him the use of his arms, and the day's fashion in tactics. The task of turning a man into a good foot-soldier is one of fundamental principles: the task of teaching the fighting man how to fight is one that must vary with every development of weapons, tactics, and the general science of war.

Fallacy No. 1.—"When the soldier's task in war is altered, there must automatically arise a need for modification in the system of his discipline in order . . . to make the troops mentally attuned to their new tasks instead of handicapping them in the execution of those tasks." This leads "A Field Officer" to the argument that the best way of making a soldier the sort of man who will excel in fighting singly or in pairs is to give him no close-order drill, but simply to train him in the actual work that he will be called upon to do in battle. The whole question is thus begged in the assumption that a man, trained both in close-order drill and in open field-work, will cling to the one and fail in the other. Yet, the wider the dispersion imposed on us by the methods and weapons of modern defence, the greater is

¹ See August Number, p. 464.

the need for cohesion and team spirit. Because it is harder to remain part of a team, in spirit and action, when widely dispersed and under lessened supervision, it is more than ever necessary to grind the spirit of unity in common effort into the very heart of the man. Discipline, in short, has its eye on the kind of man we are to make: tactical training on the use we are to make of the made man. This assumption, that troops that are good at close-order drill are harder to teach initiative and open field-work than are those who are not grounded in close-order drill, makes one wonder whether "A Field Officer" is an infantryman at all, so divorced is it from common experience. In support of it he quotes the monk, as requiring "a different discipline" from the sailor or the tradesman. Had he gone a little deeper he would have found that the monk—as, for instance, in the Order of the Benedictines—is given a common five years' grounding, irrespective of whether he will ultimately be ordered to become a schoolmaster or a missionary. He is given, in fact, five years of "close-order drill" before he is allowed to undergo special training for any "field work."

Fallacy No. 2.—"First, there was the 'back to 1914' movement." Indeed we have all groaned under the lash of the reactionary and the bonds of the bone-headed far too often since 1919—and even during the war, and before it. They are the poor in spirit, and, like other worthier poor, are always with us. But Lord Haig's dictum, quoted by "A Field Officer," is sound enough, if not misread.¹ He was not advocating a reversion to particular pre-War practices that had been found unsuitable, such as that of building up a thick firing line in the hope of thereby maintaining the maximum fire weight of a man a yard, whereby a prolonged fight might gain the superiority that would make the assault possible. Back to the 1914 regimental spirit of officer and man, with its cohesion and comradeship; back to the personal leadership, the high discipline combined with free and ingenious initiative, the fine care of his men, that characterized the best regimental officer of that day; and to the devotion and determination that were the fruit of their qualities, among their men. "Back to 1914," indeed,—is it heresy to say that the Expeditionary Force of 1914 was the finest we ever put into the field? But not back to tactical methods that date themselves as those of 1914: "A Field Officer" cannot here

¹ "Then followed the experience of the Battle of the Somme . . . which showed that the principles of our pre-War training were as sound as ever . . . the longer the War lasted the more emphatically it has been realized that our original organization and training were based on correct principles. The danger of altering them too much to deal with some temporary phase has been greater than the risk of adjusting them too little."—Sir Douglas Haig's final despatch, para. 21 (p. 345 in Boraston's edition).

be acquitted of setting up a stuffed figure to tilt at. It was not the training of the army of 1914 that was at fault; it was the rigidity of the Higher Command that failed to adapt to new conditions an instrument well suited and conditioned for such adaptations and development. But that is another story—I am not advocating years of close-order drill for Generals. I do not think they ought to be trained like Benedictine monks.

Fallacy No. 3.—"Then there is the Tattoo complex." The staging of old-time battles does not teach any soldier, nor, it is to be hoped, any civilian above the age of 15, that the tactics enacted on the arena are those we ought to use to-day. But such spectacles may show how the military virtues of comradely cohesion, team-work if you will, devotion and courage have faced difficulty and danger in other days, and they help to build up an appreciation of continuity and inheritance from the past. "Let us now praise famous men, and our fathers that begat us" is their spirit. Of course, in this complex and difficult life we lead, we may make the mistake of giving too much time, and too many troops, to such pageants: and yet anything that brings the nation and its army closer together, and heightens the sense in each of common history and fine traditions, and of the strange call of the drum throughout the ages, is not to be lightly given up.

"The soldier's is the trade;
In any wind and weather.
He steals the heart of maid
And man together. . . .
But down the distance they,
With dying note and swelling,
Walk the resounding way
To the still dwelling."—(A. E. HOUSMAN.)

In fact, there is something in soldiering that gets into the blood—and it can be there without the least drop of militarism, and with a wonderfully heartening effect on the whole constitution. The "Tattoo problem" for the trainer of troops is simply one of economy, of learning to get more value out of Tattoos whilst reducing the effort they entail.

Fallacy No. 4.—That those who believe in close-order drill are "advocating it, as an essential preliminary" to training the soldier for the requirements of the 1934 battle-field, "he should be grounded in the obsolete formations of 1734." It is argued that Cromwell did not use the drill of 1666, "and all that," to create the New Model Army. How wise he was! Yet, if Harold had enjoyed the opportunity of using the close-order drill of the New Model Army for a preliminary training of his Saxons, he might have won the Battle of Hastings. They might

then at least have had the discipline to refrain from the fatal break from their stockades before the feint of the Norman cavalry. The truth is that, at all periods, the best methods should first be used for making the soldier into a disciplined fighting man, and that it is a matter of coincidence whether the tactical training of the times bears any marked resemblance to these methods or not. Tactical formations change rapidly ; man but slowly.

Fallacy No. 5.—"In close-order drill . . . the effect is to produce, exactly on the word of command, some simultaneous physical action on the part of those under command, without necessarily any understanding of the object the commander wishes to achieve." This is sheer mis-statement—or else the writer has in mind some other kind of close-order drill than that laid down for, and explained to, the British Army in *Infantry Training*. Bad drill and drill not understood can, alas ! be seen all too often. The effect of good close-order drill is, on the contrary, to train men to place themselves, in an attitude of the greatest physical and mental receptivity and alertness, at the unlimited disposal of their commander, and, by the skill and solidarity with which they execute his commands, develop a feeling of corporate endeavour and fellowship with their commander and their comrades in the united effort to produce drill so good that it becomes a thing of beauty, a source of mutual satisfaction, an expression of military pride, and, in short, a form of disciplined self-expression : a military work of art. It has, indeed, the spirit of the morris dance, and it has survived the morris dance just because it has continued to be a natural expression of real feelings. There are many things that should have given "A Field Officer" pause in assuming too rashly that close-order drill is antipathetic to the development of loose-order field virtues. One cannot suppose him ignorant of the fact that the Gurkha, than whom we have no better individual stalker and scout in the Indian Army, and to whom British soldiers have often been attached to learn the freer kinds of field work, loves close-order drill and excels at it. So much so that his company officer can give him no greater pleasure than to take him out on the barrack square and drill him for an hour or two. If they can get no one else to drill them, Gurkha recruits will even go out in their brief spare time and drill each other. This is not an exaggeration ; I have often seen them do it. In the same way the African rifleman's idea of Heaven is to be drilled by a white officer for a couple of hours in a blazing sun. The explanation is simple : men of martial races, who by nature and inheritance are fighting men, know instinctively and by experience that they get a kick out of close-order drill, the thrill of corporate effort that is at the heart of all good soldiering. Close-order drill has been proved to produce more directly and more rapidly than

any other means this pride in cohesion. That is not to say that other things should be sacrificed by any disproportionate use of it.

Fallacy No. 6.—"The success" of the Dominion troops in the Great War "was in a great measure . . . due to there having been no time available to impose on them a training of unreasoning obedience in close formations." I have seen a very serious traffic block during the first Somme battle due solely to the lack of such training in a splendid Australian unit. The idea of the superiority of the free-minded amateur over the hidebound trained soldier is attractive, but the facts, as well as reason, are against it. The successes of "undrilled" troops against "drilled" ones have always been explicable by superior leading, a burning national cause that the regulars did not possess, or some other reason that has, by its special and unusual force, temporarily overcome the lack of disciplined training. Even so, for every example of the triumph of "undrilled" troops that can be quoted, a score could be adduced of the triumph of well-drilled against overwhelming numbers of less disciplined troops. There are no irregular troops who would not be finer instruments of war were they to be adequately trained in close-order drill. One of the chief and most important differences between the two is the greater resiliency of regular troops. Germans, French, and ourselves all found in the earlier stages of the War, when pre-War regulars were still in the field, that the regular troops recovered from heavy casualties and were fit to be used again after a much shorter interval of rest and reorganization than was required by the purely War-trained troops. Rest, clean billets, good hot food, baths, clean clothes, and *close-order drill* were the first agents in this rehabilitation. The American troops, too, had the special virtues of our Dominion troops, even to their lack of "training in unreasoning obedience in close formations"; yet they were no more successful.

Fallacy No. 7.—That the need for supervision in the Army, on routine duties, etc., comes from "a wrongly conceived discipline," and an absence in the soldier of the self-respect and pride in his calling possessed by his civilian counterpart. Has it occurred to those who argue in this way—and there are many such besides "A Field Officer"—that in the nature of things we lack, in the Army to-day, the system of ferocious punishment for "minor offences" that is in vogue in industry? To take "A Field Officer's" own example of the delivery of coal by an Army vehicle and fatigue party side by side with a civilian cart whose driver is either alone or helped by a single man. Let us pass over the impropriety of taking it for granted that too many men are detailed for the fatigue party and that the section commander does no work, whereas in a well-run company the right number of men would be

sent, under their own section commander or one of the section answering for him, and both men and leader would work, cheerfully and efficiently, as a corporate body. Let us suppose rather that the soldier slacks at his job, and that the civilian, through slackness or perhaps for some perfectly good reason, takes longer over his than his employer thinks reasonable. The soldier would get a couple of extra working parties, or his leader a reprimand. But the civilian? He would lose his job. At a blow—and sometimes for a first offence—the man's livelihood would be swept away and the greatest hardship inflicted on his whole family, had he one, while a far worse punishment than the actual loss of pay would be likely to fall on the man himself by the loss of self-respect and of the respect of his family, that almost always follows on a man's being thrown out of work through his own fault. The constant dread of loss of his job, in fact, makes comparisons between soldier and working man impossible. No doubt the humane methods of the Army could not be applied to civil labour; it would cost the employer too much to provide the supervision that would become necessary. But how much better if they could be applied, and if the working man's pride and enthusiasm could be roused so that the ferocious punishment of discharge need be used, as in the Army, only in extreme cases! But, of course, there is general room for much improvement in the Army in the whole matter of routine duties and fatigues—the remedy, however, lies in the hands of every commanding officer and company commander. Such duties *can* be made an excellent form of military training, not only in the development of the junior leader's powers of command, but in economy of labour and in working without supervision.

Fallacy No. 8.—That physical training is a "better basis of discipline" than close-order drill. Physical training, if done regularly and in the right way, can confer physical fitness, increased mental and bodily agility, brightness and alertness of mind, and a general access of liveliness, balance and well-being. For these reasons it is an admirable companion for close-order drill, which fosters cohesion, soldierly pride and *esprit de corps*—in a word, discipline. The two do not conflict, nor can one replace the other. It is as absurd to set one against the other as it is to confuse close-order drill with tactical training.

There are other statements in "A Field Officer's" article that call for correction—for instance, that it is usual to object to troops getting dirty on training when tactical action calls for it; that there is no attempt to practise troops in acting on impromptu orders; that it is considered better to fail in the "right" way than to succeed in the "wrong." If these things are so in some companies—and, of course, they are—it is much to be regretted; but it is not just to blame any

system but that of the company commander concerned. He sins against the light. Then there is the question of the "drill-mindedness" of that "chartered reactionary," the Regimental Sergeant-Major, and the consequent wrong-mindedness of all the junior N.C.O.s, which shock "A Field Officer." Let experience speak: and it is the universal experience of infantry officers that, if the R.S.M. is a good one, he is worth his weight in gold. His fine attitude of absolute loyalty to his officers, his soldierly bearing and deportment, his creation of a happy sergeants' mess and maintenance of a good tone therein, and his general influence on the smartness of the battalion, need only contrasting with what soon obtains when he lacks these qualities in any marked degree, to dispose of any case against his usefulness. In training and in war he may well be given the control of the defence of battalion headquarters, in addition to his duties with the ammunition reserve, as "A Field Officer" usefully suggests—it is merely a matter for the commanding officer. But, even without this, a good R.S.M. is invaluable in war, in the vital task of restoring in the least possible time those military virtues that suffer after heavy losses and large reinforcements.

If I have carried the reader with me in this review of the fallacies on which "A Field Officer" bases his argument for the abolition of close-order drill, there is little more to be said. It may not be out of place, however, to state the position of close-order drill from the point of view of an infantry company commander who has been that for a long time—far too long in his own opinion. This view is based on experience only, irrespective of Army manuals.

In the training of troops for war, it is essential in the first place to be clear about the sort of man it is desired to produce. In the British infantry the emphasis necessarily falls more heavily on certain points than in other arms and armies; but I do not believe that the qualities that are the groundwork of good British infantry in 1934 are any other than they were in 1334, or 1734, or 1834. They are, and surely always have been:—

- (1) Physical fitness, that will make it possible for the man to answer the demands made upon him;
- (2) Steadfastness, that will enable him to endure fatigue, hunger, cold, heat, hardships and deprivations of all kinds, and fear, to the end;
- (3) Confidence in his leader's character and military efficiency, so that he will be immune from the insidious inroads of distrust and uninformed criticism;
- (4) Pride in the efficiency of his platoon, company, and battalion, and in the certainty that they will do their duty under all

possible circumstances, and in the knowledge that they have done so in the past ;

- (5) Obedience, by which he embraces the intention of his leader as his own objective, to be attained by the exercise of every faculty, of courage, knowledge, or initiative, that he possesses, in co-operation with the rest of his sub-unit ;
- (6) A sense of solidarity with his leader and comrades, by which it becomes as impossible for him to fail them, as it is inconceivable that they should fail him.

These are the military virtues for the British infantryman. But a man might be born with most of them, and acquire the rest, and yet be untrained to arms. There remains, in short, to exercise him in the use of the weapons of his time, to accustom him to work within the existing organization, and to teach him to manoeuvre in accordance with the tactics of the day. In the inculcation of these fundamental military virtues close-order drill is the quickest and most effective way of providing the essential groundwork. Though all other available methods of developing these virtues should be used as fully as possible, a high standard of close-order drill may most readily be made the synthesis and result of a high military spirit, as well as an indication of progress that is being made. Close-order drill, properly carried out, should indeed be a sort of sacrament of soldiering, an outward and visible sign of the inward and spiritual grace of a right relationship between the leader and the led, the leader making clear demands in a correct, confident, and military manner, while his subordinates strain every nerve to carry out his orders with the utmost exactitude, to the attainment of a common sense of a difficult task perfectly performed. To suggest that a high standard in close-order drill tends to make troops less easy to train in meeting sudden and unexpected situations, and in working dispersed and without supervision, is against all experience. "Bunching," which "A Field Officer" attributes to training in close-order drill, is, on the battlefield, a phenomenon that has its roots in far more fundamental psychology than a stupid failure on the part of the troops to understand the object of such drill. Whenever the mind begins to fail, through fear or any other cause, one of the first symptoms is its tendency to seek support outside itself. While the soldier is still striving to force himself to do what he knows to be his duty, and long before he reaches the point of seeking relief from the strain of fear by giving way to inaction or flight, he goes through this need for seeking the support of propinquity to his fellows, and of the personal leadership of his commander. Under modern conditions, where the section is often, at the most trying times, and under increasingly terrible fire, more or less isolated, this tendency must be especially

strong. The need for personal leadership becomes proportionally greater, from the very causes that render it less practicable. In such circumstances the spirit that close-order drill inculcates is of the utmost value—and may at times be our only means of extending the support of leadership to our men in their hour of need. It is the spirit of cohesion, the swarm spirit that is at work amongst bees—an instinctive knowledge of solidarity, irrespective of intervals of space between bee and bee, or between man and man, or section and section. It is indeed a mystical support, but common rough men can partake of mysteries if they be conveyed through intelligible symbols—such as close-order drill.

One more example. Anyone who has, like the writer, found himself faced with the task of restoring to a state of efficiency a company that had got into a really bad condition will surely agree that the prescription is somewhat as follows:—a careful overhaul of the messing, great activity in all the men's games, plenty of work, in which interesting field training and physical training should play a great part, the imposition of a very high standard in barrack routine, and the special instruction of the N.C.Os in leadership, the whole structure being made coherent in a steady and progressive course of close-order drill. To abandon close-order drill would indeed, as "A Field Officer" pleads, be only an experiment. But what harm it would do, before necessity drove us to restore it to its essential place as a fundamental part of the training of the infantry soldier!

Let us sweep away anachronisms, and let us learn avidly of psychology and modern science to use troops in the most economic, effective, and "modern" manner in the complexity and immensity of modern war: but do not let us abandon our traditional thoroughness in tempering the steel from which we are to fashion our modern tools. War remains war—at last the strain comes to rest on bedrock, and is seen to be still based on the simple military virtues of the common fighting man. In the English soldier we have a fighting man second to none in the history of the world. New methods of fighting may be learned, and must be learned; but the fundamental qualities that will win the next war are those that won at Thermopylae—courage, cohesion, discipline, devotion. The close-order drill of the Spartan army was—Spartan. It is not a "change of heart" we want, as "A Field Officer" maintains; it is the old heart, built up in the old way. But we often need a change of head. We need, not less fine feeling, but more clear thinking.

The typical organic disease of armies springs from a dissociation between the higher command and staff and the fighting man. Let us guard against that, guided by the lessons of the last half century. If we fail in a future war, it will not be because we do not know how to make soldiers, but because we have forgotten how to lead them.

THE TRAINING OF THE ARMY, 1934

By LIEUT.-COLONEL A. G. CUNNINGHAM, D.S.O., M.C., R.A.

IT was unfortunate that at a time when the financial drought, which in past years has greatly restricted extended training, appeared to be easing, lack of water caused curtailment of the 1934 programme. In particular it was found impossible to concentrate the Eastern Command troops in East Anglia for operations over an extended area, and the scope of an exercise for two divisions and various attached troops on Salisbury Plain had to be considerably reduced. In spite of this drawback, divisional training was carried out by all Regular formations except the 4th Division, and the year was remarkable for the variety and ingenuity of the schemes.

It was laid down that during 1934 particular consideration was to be given to the question of maintaining the momentum of the attack. The defence also and its attendant problems, the occupation of rearward positions and the employment of covering troops, was indicated for special study. It will be appreciated that to give a full description of the exercises held and a full account of the lessons derived from them is not possible in a limited space, so that only a brief summary of the exercises held by divisions and commands, with a few comments on the main lessons brought out, can be given.

WAR OFFICE EXERCISE.

During May a valuable exercise in the practice of Staff Duties was carried out in the Aldershot Command. The full staffs of a corps and two divisions were formed for the purpose. The staffs were worked to their full capacity, and the strain which staff work imposes during continuous operations was well illustrated.

1ST DIVISION.

At the conclusion of battalion training the 1st Division was concentrated on Salisbury Plain in September, and prior to taking part in the Southern Command exercise against a mobile force, carried out brigade training and two divisional exercises. The 1st Division therefore had the advantage of training over new ground, and those who

have carried out a succession of training seasons over the somewhat limited and very similar training areas in Aldershot well know the great value of this practice.

As a digression perhaps one may be allowed to lament that circumstances should dictate that most of the training in England has to be carried out over plains, bogs, mountains, and heathland, while opportunities for utilizing enclosed ground of a nature similar to many possible theatres of war are all too few. Should this reach the eyes of any of those who are wont to bemoan in the Press the besmirching of England's beauty spots by the soldier during training, let them hold their pens for a moment and ponder over our needs.

Of the exercises carried out, the first had the object of practising on the attacking side the approach march on a broad front, the envelopment of an enemy position, a night attack, and exploitation of the attack by day. On the defending side practice was to be gained in the defence of a wide area by a small force.

To state the requirements of an enveloping movement is easy. The essentials are obvious: the location of the enemy's flank and the ensuing turning movement; but in practice difficulties appear. The choice of routes may be limited and not entirely suitable; steps must be taken to pin the enemy to his position, and the synchronization of the frontal pinning attack with the turning movement has to be achieved. It was emphasized that in this type of operation the enveloping force can hardly move wide enough, and the objective must be deep to prevent the enemy slipping away at the first threat. Both in this scheme and in an exercise held in another division the question of making detachments from a main force assumed importance. It is perhaps one of the most difficult decisions a commander has to make. Will the detachment justify itself and contain sufficient enemy troops to enable the remainder to be defeated by a superior concentration, or will the reverse process take place and the enemy be presented with a plum all ready for the picking?

The second exercise was designed to bring out in its first phase the differences in dispositions and arrangements required in the advance of a division over open and close country. The second phase entailed the withdrawal by night to a defensive position, with just sufficient time before dark available for reconnaissance. In the first part of the exercise one of the three infantry brigades was used as the enemy, but for the final situation it rejoined the division. As a result the divisional "battle drill" was fully tested; the Signals and various component parts of the division were also thoroughly put to the proof.

The need for practice in "battle drill" of the higher formations

was stressed as a result of the training carried out during 1933. Exercises without troops or with the use of skeleton formations are apt to lead to false impressions; troops are so easily moved on paper. It is only when the troops are actually represented that the Staff can obtain true practice in moving them, in collecting and collating information, and in feeding and maintaining the men, animals and vehicles.

2ND DIVISION.

Divisional training took place during August, the troops available being the divisional cavalry regiment, two infantry brigades, and the remaining divisional troops.

Three schemes of widely different natures were carried out within the training area of the Aldershot Command. The first took the form of a controlled withdrawal, and was designed primarily as a test of communications. In order to test the signal system to the full, the exercise was carried out on a divisional basis. The peace headquarters of the division, as far as staff officers were concerned, were expanded to war strength. All the troops were on one side, and the enemy action was depicted by the umpires. It cannot be denied that schemes with an imaginary enemy call for an undue amount of imagination on the part of the troops, and entail considerable strain on the umpires, whose "picture painting" brushes can never be allowed to flag. This drawback, however, was more than counterbalanced by the practice obtained by the staffs in dealing with actual troops.

The exercise developed into the retreat of the I and II Corps after Mons in miniature. The infantry brigades had to retire one on either side of a dense forest, and, the routes being limited, the arrangements for the withdrawal required very careful co-ordination. Before the withdrawal could commence the aerodrome of the army co-operation squadron had to be cleared. This was actually done in practice. The time taken was some three hours only, without any dislocation of air information.

The second scheme was a "combined operation" executed on land, and was constructed so that the disembarkation should approximate as closely as possible in all its details to an actual landing on a coast. A portion of the training area was formed into an imaginary island some 50 miles in circumference, 16 miles long by 11 miles broad. Only parts of the coast were suitable for landing. The task of its defence was given to three battalions and a weak force of artillery. Such a task, in fact, as might face our forces in several of our island possessions. The invaders were known to number not more than an infantry brigade with attached troops.

The scheme worked out in a most interesting way. The appreciation by the defence was that a landing could not be prevented, but the enemy must be attacked as soon as possible after the landing had commenced. A landing at night was not anticipated. The invaders decided to risk all the disadvantages of a night landing—without doubt a most precarious operation—and commenced their main landing at 2.45 a.m., with the object of capturing one of two ports on either side of the island. Alternative plans had been made, so that the attack could be directed against one port or the other as soon as the enemy disclosed the position of his troops. With the main landing were combined two subsidiary landings, the most important of which was timed to take place an hour after the main landing.

The invasion was successful, due in the main to a flexible and well worked out plan, but assisted also by nature in the form of a convenient mist in the early hours of the morning, which helped the covering force to overrun an enemy battalion.

The difficulty which the defence will always encounter in operations of this nature—in deciding which is the main and which a feint landing—was well illustrated. In fact, one of the subsidiary landings was an example of a valuable "detachment." It had the effect of delaying the move of the main column of the defence and drawing off a third of the main defending force.

The exercise was remarkable for the care and labour taken by the invading forces in working out the detail of the landing and the subsequent movements. Embarkation and disembarkation tables and details of times, etc., were worked out down to the last man, and the landing was carried out in parties representing as near as possible the composition of the "tows." Great care was taken to explain to every man exactly what was happening so as to assist his imagination to the fullest possible degree. The precautions taken to preserve secrecy on both sides were most successful, a condition which is not so usual during peace manœuvres as one might wish.

The final scheme has been called in the Press "the nearest approach to trench warfare seen in training since 1918." Although there may be truth in this statement, it was not intended to be an operation of static warfare. Formations in reserve—possibly considerably diminished in numbers by the previous fighting—may be called upon to occupy precautionary defensive positions in any form of warfare. The object of the exercise was to ascertain to what extent a defensive line could be prepared and organized in forty-eight hours without molestation by the enemy: how much wiring, what nature of digging, and what extent of clearing could be done in the time. The results were most valuable

and showed that after forty-eight hours there will still be much to be done to complete even an elementary trench system, quite apart from indulging in such luxuries as extended communication trenches, revetment, etc.

3RD DIVISION.

The 3rd Division was allotted an area off Salisbury Plain between Swindon and Chippenham for brigade and divisional training. Two divisional schemes were carried out. The country is enclosed, and provided a valuable corrective to those accustomed to train only on the open stretches of the Plain. Owing to lack of observation, infantry were often deprived of artillery and machine-gun support, and in consequence were forced to rely only on the use of ground and cover in their advance, and on their rifles and Lewis guns in defence.

One exercise was designed to study the maintenance of the momentum of the advance. The division, as part of a larger formation, was following up weak rearguards on a line of advance which entailed the crossing of a river. A point which was well brought out was the great amount of organization required to prevent delay in crossing a river the approaches to which are limited. The moving up of the large number of lorries carrying the bridging material over already congested roads, the arrangements for reconnaissance on both sides of the river, the order of crossing, and the traffic control after the bridges have been built, all assume vast importance in the saving of time.

The other scheme was framed to give the formations in the division an opportunity of employing mobility without being distracted by danger of tank attacks. Two infantry brigades advancing either side of the River Avon were destined to seize a stronghold defended by an infantry brigade and a cavalry brigade. The attacking forces, finding this nut too hard to crack without envelopment, took steps during the night to move one brigade across the river on to the other flank. Meanwhile the defending brigade, imbued with the spirit of the offensive-defensive, decided to cover its stronghold with a weak force of infantry reinforced by a large number of machine guns. It then collected as many lorries (baggage, supply, etc.) as possible, and during the night moved rather more than a battalion of infantry outside the flank which the attackers were taking steps to extend. Before dawn this motorized force, followed by the cavalry brigade, had placed themselves behind the enemy gun line. Subsequent operations took the form of a withdrawal of the attacking forces from an untenable position. The exercise particularly emphasized the need for troops in the rear areas to organize their own all-round local protection—a need which has become of increasing importance with the advent of the armoured fighting vehicle.

4TH DIVISION.

As already mentioned, owing to the drought it was found impossible to concentrate the 4th Division for training. Collective training was therefore carried out at or near the peace stations. The final schemes carried out by each infantry brigade were directed by the G.O.C. Eastern Command, and were devised to exercise the complete brigade against a skeleton enemy. This avoided the somewhat unreal picture, under modern conditions, of small units being pitted against forces of approximately the same strength, and equipped in the same manner.

NORTHERN COMMAND EXERCISE.

The primary object of the exercise carried out in the Northern Command in September, in which both the Royal Navy and the Air Force took part, was to "test the general arrangements for inter-communication between the three Services in the early stages of a combined operation." It can readily be understood that both the means of communication and signal procedure must of necessity be different in each of the Services. Co-ordinating measures, therefore, have to be worked out in considerable detail to enable an operation in which the three Services are engaged to run smoothly.

The intention of the invaders followed the usual course for combined operations, and entailed the capture of a port from which operations could be extended to secure an area suitable as an air base.

To indicate the scale on which the operation was carried out it may be mentioned that the fleet which was present consisted of four battle-ships, five cruisers, three destroyer flotillas, and one submarine flotilla; the Air Force on the invading side, of two bomber, one fighter, and two army co-operation squadrons. Under cover of this force it was proposed to land a division in which all units and formations were to be represented, though some in skeleton. Further, as the warships had to be used as transports, it was impossible to land guns, horses, tanks, etc.; these, however, were allowed to join the force ashore at calculated times. The capture of the port of Hull was the object of this division. The defence force opposing the landing consisted of about one infantry brigade group, which was responsible for 80 miles of coast.

The plan for the landing involved putting troops ashore by day on six different beaches on a front of some 20 miles. The 2,000 troops who had been carried in the fleet were put ashore without a hitch; the success of this operation was due in the main to the excellent organization and execution of the Royal Navy. After a short advance conditions were stabilized so as to allow of the system of communication being thoroughly tried out.

As far as signal communication is concerned the detailed results of the exercise are still to be disclosed, but it is known that the arrangements in force worked efficiently, and showed the forethought with which these had been planned. The means of communication employed throughout the three Services were mainly wireless telegraphy and radio-telephony, and when it is calculated how large a number of sets must have been concentrated in quite a small area, with the consequent possibility of jamming and interference, the result must be regarded as satisfactory.

An interesting detail transpired in connection with the naval forward observation officers controlling the fire of the ships. The exercise showed the necessity of providing suitable artillery officers to accompany naval F.O.Os, so as to avoid the latter being handicapped by the strange surroundings and the difficulties in recognizing the various headquarters, units, etc., likely to be met on landing.

SOUTHERN COMMAND EXERCISE.

The exercise held by the Southern Command in the area lying between Newbury and Salisbury, from 18th to 21st September, was the most important of the year; not only because of the greater numbers engaged, but also because it was the first appearance of the new tank brigade, and because of the concentration of the largest wholly mechanized force yet employed in our training.

The tank brigade, consisting of four tank battalions, is a new creation, presenting new problems in control, tactical handling, and organization. In its early training considerable success was obtained in control and flexibility, and it was desired to employ the brigade to ascertain to what extent it was capable of carrying out an independent role.

The "Mobile Force" formed for the exercise consisted of two squadrons of armoured cars, a motor-borne infantry brigade, a tank brigade, a field artillery brigade, an A.A. battery and a field company. R.E., all mechanized. Opposed to this force was the 1st Division, with two armoured car companies, a cavalry brigade and an A.A. battery; but no tanks were included. The air forces on both sides were the same, and consisted of four flights of army co-operation machines, and one bomber and one fighter squadron.

The task given to the Mobile Force was to carry out a raid against various objectives—headquarters, ammunition dumps, aerodromes, etc.—lying in an area of about 140 square miles.¹ The raid entailed a penetration of some 60 miles into enemy country, and three days were allowed for the completion of the task. The task of defending the area was given to the 1st Division and attached troops. The initial steps

taken by the 1st Division were to divide the area covering the vulnerable points into two, and to make an infantry brigade responsible for the defence of each. The remaining infantry brigade was given sufficient buses for two battalions and, together with the cavalry brigade, was formed into a mobile column for use as circumstances directed.

The plan of the Mobile Force commander was to send his motorized infantry brigade ahead to seize a bridgehead on the river, which lay across his line of advance. The tank brigade was to follow fourteen hours later and "harbour" in the woods lying behind the bridgehead. Orders for subsequent moves were to be given on reaching the "harbours."

The story of the operation is soon told. The bridgehead was occupied by the Mobile Force without opposition, and the tank brigade occupied its "harbours" with only slight difficulty, but it was soon discovered, and having lost the element of surprise, it was unable to proceed with the role allotted. Consequently the whole Mobile Force was ordered to withdraw. Meanwhile the 1st Division mobile column had been placed across its line of retirement and has caused considerable havoc amongst the non-fighting vehicles.¹

Although the conclusions to be drawn from the exercise are largely negative, they are none the less valuable. The liability of tanks to discovery from the air is nothing new, and operations in an enemy country would tend to make secrecy as to their movements almost impossible. Surprise, therefore, is bound to be lost unless they can rely on their great mobility. In this case they were hampered by large numbers of non-fighting vehicles, which in themselves form a tempting objective for the enemy. It would appear probable, therefore, that the tank brigade, used as such, is too unwieldy to be employed in one block in the raiding rôle. It would have been interesting to have seen the effect of several raiding columns, each acting independently but with definite objectives, crossing the frontier at different points on the "straight-in and straight-out" principle.

It is notable how difficult it has been to formulate a doctrine for the general employment of an arm which is so obviously a very potent asset in war, and a satisfactory solution has yet to be found. The characteristics of the tank in its present stage of evolution render it peculiarly suitable for employment in the independent rôle, but it is still open to question whether in this rôle it will produce greater effect than when employed at or near the main battle front in co-operation with the other arms.

¹ Out of the 1,000 vehicles in the Mobile Force only 240 were armoured fighting vehicles.

TERRITORIAL ARMY.

The training of the Territorial Army proceeded on normal lines. It had been intended to include a Territorial infantry brigade and a field artillery brigade in the Southern Command exercise, but unfortunately this was found impossible, again owing to the drought. The 21st Armoured Car Co., however, did take part in this exercise. The 46th (North Midland) Division concentrated for training at Catterick. The periodical concentration of Territorial divisions has an excellent effect, tending to give a wider outlook and to establish an *esprit de division* which is such an asset in war.

CONCLUSIONS.

In conclusion perhaps some reflections may be allowed on the two main subjects set out for study during the year :—

(1) Firstly, in regard to the maintenance of the momentum of the advance in the phase immediately following a successful attack : except possibly in so far as the employment of tanks is concerned, the solution would appear to lie rather in a high standard of training in tactical appreciation and quick decision, and in flexibility of the initial plan, more than in any particular revision of tactics. The employment of tanks for this purpose opens up a wide field of thought. How and when they are to be put in, to what extent they are to penetrate, and how touch is to be maintained with the advancing infantry. But the limitations imposed on tanks by ground will still render it necessary for the problem to be considered without their employment.

Perhaps the greatest strides have been made in the matter of control. Radio-telephony has tightened the commanders' hold on the battle, and has enabled the artillery to produce quick support against the unsuspected machine gun. The number of radio-telephony sets is steadily on the increase, and much attention has been paid during the past training season to the technical questions accruing to the handling of a large number of sets in a small area. The possibility of jamming cannot be lost sight of, but it will be remembered that jamming is a two-edged device and was very sparingly used during the War.

Finally must be mentioned the difficulty in peace of creating a realistic imitation of war conditions as they would be at the time the initial attack is losing its momentum.

(2) In connection with defence, the time factor, anti-tank defence, and the reconnaissance of rear positions previous to a withdrawal seem worthy of consideration. In one of the defensive schemes carried out although the corps orders were given out verbally on the ground at

10 a.m., digging had not commenced that night, and two days later, in spite of excellent work on the part of the troops, the defences were still incomplete. The time on the first day had been eaten up by reconnaissances, orders, and co-ordinating conferences. It is suggested that unless several days are available the time factor will force the initial plan to be made by battalion commanders on their own frontages. A co-ordinated defence can then be built up on this foundation and adjustments made. The essential requirements of formations and units are their boundaries and a foremost defended locality on each boundary. Initial reconnaissance and orders therefore above battalions could be directed only to defining these essentials ; the thoroughness with which the reconnaissances are made being dependent on the time available. The year 1935 will show how this question will be affected by the experimental reorganization of an infantry brigade in which the Vickers machine guns are concentrated in the support battalion, and the remaining three battalions of four companies each are armed with rifles and light machine guns only. If it is agreed that the defence should be built up from the bottom, probably the new organization will have little effect on the time factor. The battalion commander will make his plan as heretofore with his gunner and a machine gunner, but the latter will come from the support battalion.

It was noticeable throughout the training that, either in the occupation of a defensive line or in preparing an area for defence, it may often be advisable to centralize the anti-tank defence even as far as bringing it under divisional control. Infantry brigades may well find themselves in localities which are tank-proof by nature, and their anti-tank weapons redundant unless used elsewhere. The question of the different methods of anti-tank defence required in varying situations was well exemplified in the Southern Command exercise, where aerodromes, headquarters, and ammunition dumps, etc., required defending.

For the reconnaissance of rear positions previous to a withdrawal little difficulty was experienced in finding the necessary reconnaissance parties when only one line had to be reconnoitred. When, however, an intermediate line was to be taken up, entailing the reconnaissance of two lines at once, difficulties arose in regard to finding the personnel and the means of getting them back. It is suggested that when the enemy air forces are active, in order not to disclose the line being reconnoitred, some form of control should be exercised in regard to the actual strengths of the parties sent back, the routes to be followed, and the rendezvous.

BRITISH STRATEGY AND BATTLES IN THE WESTPHALIAN CAMPAIGNS OF 1758-1762

By C. T. ATKINSON.

MINDEN, deservedly enough, is in the select category of really well-known British battles. Who has not been thrilled by the tale of the advance of the six British battalions, unsupported save for a Hanoverian brigade in second line, right into the centre of the French? "Nothing could stop that astonishing infantry," and their culminating feat of charging and routing unbroken cavalry dumbfounded contemporary opinion. The darker side to the story, Lord George Sackville's inexplicable refusal to let his cavalry charge and complete the work of the infantry, is also familiar: but how many who know the story of Minden could explain how the six battalions came there, or describe with any accuracy the campaigns in which Minden stands out so prominently? "Conquering America in Germany," many might suggest, without perhaps too much readiness to enlarge on the topic. "Helping Frederick the Great to beat the French," might be an alternative, though not a really satisfactory account of what British troops were doing in Western Germany between 1758 and 1762.

But, however little known their story, these campaigns were far from the least important side of the Seven Years' War, and the British contingent at its strongest was nearly half as large again as that which marched with Marlborough to Blenheim, even if it was only about a quarter of that Anglo-German army in King George II's pay to which, as much as to his own resourcefulness and determination, and to the sluggishness and errors of his Austrian and Russian adversaries, Frederick owed his astonishing escape from destruction.

Three things must be emphasized if the work of the British regiments in the Westphalian campaigns is to be properly appreciated. They were "conquering America in Germany," but by the negative process of preventing the French from doing so. They were "helping Frederick," but not so much "to beat the French" as "by beating the French" and freeing him from all anxiety for his right flank and rear; for, after Rossbach, Frederick never saw a Frenchman again. Thirdly, if the army which achieved these objects was "Anglo-German," it

emphatically was not "Anglo-Prussian." Even in 1757, when Cumberland was trying to defend Hanover and Frederick's Rhenish and Westphalian provinces without the help of British troops, the 10,000 Prussians who should have reinforced his Hanoverians and Brunswickers had been called off to assist Frederick in Saxony, and though until 1760 ten squadrons of Prussian dragoons served in Western Germany, Frederick's disasters of 1759 caused their recall. The Hanoverians were just as much George II's subjects as the British, and the Brunswickers and Hessians were mercenaries, provided by minor German principalities whose rulers were as much independent members of the Holy Roman Empire as was Frederick himself, Germans but not Prussians. After 1759 a "Free Corps" of Prussian light troops, raised in imitation of the Croats and Hussars of the Austrian service, alone represented Prussia in Western Germany, but this no more makes the army "Anglo-Prussian" than the presence of small French and Italian detachments at Megiddo in September, 1918, makes that victory an "Allied" rather than a British triumph.

The commander of this army was, like most of his troops, a German ; but, though a general in the Prussian service, was no more Prussian by birth than was Keith, the Scottish Jacobite who served Frederick so well and fell gloriously at Hochkirch. Ferdinand of Brunswick, when commanding in Westphalia, regarded himself as George II's general, and in his dispatches invariably refers to his army as "Your Majesty's troops." He was under no illusions as to his position or his obligations. His army was on the same footing as Marlborough's at Blenheim, except that its commander was not British by birth. If the British only formed a fraction of it, George II paid for the whole force.

"Conquering America on the banks of the Elbe," as already explained, was in reality the French plan. It is true that Pitt, when charged with inconsistency in sending British troops to defend the "beggarly Electorate" he had so vigorously denounced in his irresponsible Opposition days, defended his action in this way, but the method was forced on him by the French. As between England and France the Seven Years' War was in origin and motive purely colonial, begun in North American backwoods by the intrusion of Virginian pioneers into the region beyond the Alleghanies, over which both France and England maintained shadowy claims. In such a war the essential problem for France was how to utilize her large army. Several times the British peace establishment, it had to find a place in which to fight, but for that it depended on the French navy's ability to transport it across the seas. Once Great Britain had established her "command of the seas," reinforcing Montcalm in Canada was almost

impossible, and, anyway, Canada was no country in which a nobleman—and in the France of Louis XV the nobles ran the army—could make a campaign with any satisfaction or comfort. "Spruce beer" was no substitute for "Rhenish" or "Moselle," and the Canadian forests no place for the enormous trains of baggage wagons essential to the needs of the French officers, which clogged their army's movements even in Germany. Invading England was a more attractive prospect, but would have involved the dangers and discomforts of the Channel passage, and depended on the highly unlikely chance of the French navy gaining control of the Channel. Hanover, however, was within reach. The British Navy could not dispute the passage of the Rhine or Weser; in Western Germany a gentleman could quite contemplate campaigning. Hanover, too, was dear to "Georges," and its conquest offered France a set-off against possible colonial losses. The French had recovered Cape Breton in 1748 through being in occupation of the Austrian Netherlands, which England was determined to recover for Maria Theresa, even at the sacrifice of "the people's darling acquisition." So now Hanover promised the French army an accessible and easy prey.

To keep Hanover out of French hands was therefore essential if Great Britain was to retain her colonial gains. To capture Canada or the French West Indies would avail little if they had to be restored to recover Hanover. The task before Ferdinand of Brunswick and his British regiments was therefore defensive—to foil the French attacks, not to take the offensive and invade France. The negative object made the attainment of the end less difficult, since to maintain is usually easier than to effect a change; but Ferdinand and his men had to face heavy odds, to meet converging attacks by superior forces from the Main and from the Lower Rhine, and there are few finer examples of the skilful use of "interior lines" than these campaigns afford. Ferdinand's situation resembles Wellington's in the earlier years of the Peninsular War: he had to play a safe and cautious game, to avoid risks and heavy losses, to let slip promising chances because he could not afford to expend men freely for anything short of substantial success. His campaigns saw more manœuvring and strenuous marching than pitched battles; he could never afford to force the fighting, and after their repulse at Vellinghausen in 1761—the last battle they tried—the French became distinctly chary of attacking. Both sides therefore confined themselves to trying to manœuvre detachments of the enemy into positions in which they could be attacked with little risk of loss. March wastage far exceeded battle casualties.

In the end the object was fully attained. The French overran

Frederick's provinces West of the Rhine, Cleves and Guelders, but, though much of Hanover was reduced to little better than a desert, when it came to peace negotiations the French had only Cleves and Guelders to bargain with. Actually Guadeloupe and Martinique were sacrificed to regain for Frederick provinces he could never have recovered for himself, but the great expansion of the British Empire in 1763 was based on the successful defence of Hanover.

Both from the political and military points of view, then, these Westphalian campaigns contributed appreciably to the success of the war. Without them its story would read very differently. When it is asked why it is that, apart from Minden, they should be so little known, it is realized that the character of the warfare lacks the brilliance of Hawke's pursuit of Conflans among the rocks of Quiberon, or of Wolfe's death in the moment of victory. Even the stories of Byng and Braddock have more of the dramatic appeal which fixes things in the memory than has the mere keeping of possession and warding off of attacks; the incessant marching and counter-marching, the watchful and stubborn defence, were essential but not exciting. Only one other episode stands out—the rapid advance of the British cavalry and guns at Warburg led by the hatless and wigless Marquis of Granby, with his bald pate shining in the sun, who has attained to comparative immortality by becoming a public-house sign. Moreover, while French writers have naturally avoided the Seven Years' War, and German authors have concentrated upon Frederick's campaigns, there are few accounts of the Westphalian campaigns in English, and as Sir John Fortescue, when he came to tackle them, was still hoping to complete his "*History of the British Army*" in the moderate compass of four volumes, his treatment of them is much briefer than of some later campaigns of much less importance.

It results that these campaigns have fared but ill in battle honours. "Emsdorff," given to the 15th Hussars, then Light Dragoons, for their brilliant achievements in their baptism of fire shortly before Warburg, was actually the first battle honour given;¹ "Minden" was granted in 1801, while the 5th Fusiliers received "Wilhelmsthal" in 1836, when they were made Fusiliers, to compensate them for the loss of the privilege of wearing a grenadier cap which they had enjoyed in commemoration of the surrender to them of the famous regiment of "Grenadiers of France." To these the Ewart Committee in 1909 added "Warburg," but confined it to the cavalry, though their casualties were only 138 to the 407 of the infantry. Their reason was presumably

¹ Cf. Major Edwards' article in the May number of this JOURNAL.

that the infantry in action, besides two Highland battalions, disbanded in 1763, were two battalions formed of the massed Grenadier companies of the twelve Line regiments. These four battalions, with two cavalry regiments, formed part of a force detached to hold the enemy until the main body could arrive. They had all the hardest fighting, and had laid the foundations of victory before the British cavalry came on the scene, broke the French squadrons, and swept all before them. To refuse the battle honour to battalions whose grenadiers fought so well because these companies were acting separately seems rather a rigid application of the principle which insists on the presence of the headquarters and main body of a battalion, for the main bodies were within the area of operations, hurrying forward in support of the cavalry as fast as their legs could carry them on a stifling and sultry morning. Seeing that several battalions have received "Busaco," though their share in the fight was confined to their light companies, detached to skirmish, there seems a reasonable case for extending "Warburg."

"Wilhelmsthal" also might be extended. Ferdinand had planned an elaborate manoeuvre for intercepting a detached corps, and Granby commanded the column charged with the actual interception. As his column neared Wilhelmsthal and was almost across the French line of retreat it was vigorously counter-attacked. A sharp fight terminated on the arrival of the main body, headed by the 5th Fusiliers, in the surrender of nearly 3,000 Frenchmen. The Fusiliers' 13 casualties do not suggest that, decisive as their intervention in the battle most certainly was, they had anything like the hard fighting which fell to the Guards, who lost between them 200 officers and men, while the Grenadier battalions had another 100 casualties, and the Highlanders 60.

The Guards' claim to "Wilhelmsthal" is the stronger because they "made" three successful and important campaigns in Westphalia, but have nothing whatever to show for them. Five Line battalions are in the same plight: these, the 8th (King's), 11th (Devons), 24th (S.W.B.), 33rd (1st Duke of Wellington's) and 50th (1st Royal West Kent), had come out, along with the 5th Fusiliers and six cavalry regiments and the two Highland battalions, early in 1760. This was after Frederick's misfortunes had caused the withdrawal of the Prussian dragoons, whereupon Ferdinand had appealed to Pitt for more assistance, with the result that this "glorious reinforcement" was sent out, the Highlanders, cavalry and linesmen in time for Warburg, the Guards just too late. All these units were at Vellinghausen; some of them within a few weeks of their arrival had distinguished themselves greatly at Corbach, where the rashness of Ferdinand's youthful nephew, the hereditary Prince of Brunswick, the "Brunswick" of Valmy and Jena, had involved a detachment in grave peril. Its retreat was being

hotly pressed when a British brigade consisting of one Minden battalion, the 51st (K.O.Y.L.I.), and three of the "glorious reinforcement," the 24th (S.W.B.), 33rd (Duke's) and 50th (R.W. Kents), intervened. Their good fire discipline and splendid steadiness made a great impression and went far towards enabling the Prince to extricate his men, some of whom had fallen into disorder. Even more credit is due to the K.D.G. and 3rd D.G., who delivered a most daring and effecting charge against overwhelming numbers and, though losing heavily, achieved their aim. The Hereditary Prince, not always too generous towards the British, was for once lavish in praise and gratitude, and Ferdinand issued a special order in praise of their gallantry and good service.

"Corbach" was what Napier would classify as an "action" or "combat" rather than a "battle." Vellinghausen, however, definitely belongs to the higher category. In scale and importance it ranks with Minden and Warburg. Ferdinand had been unable to prevent his opponents, Soubise and de Broglie, from uniting, and had assumed a defensive position on the Lippe, where with 60,000 men he confronted their 100,000. Luckily for him the Marshals did not co-operate too cordially, and when de Broglie, the more energetic of them—he "had the character of a *téméraire*" one English officer wrote—attacked Ferdinand's left in force, Soubise's attack on the centre and right was none too strongly pressed and easily checked. It completely failed to prevent the transfer of reinforcements to the left, where de Broglie had carried Vellinghausen village after desperate fighting. On reinforcements arriving, Granby counter-attacked vigorously and, with the Grenadiers, the Highlanders and the 12th (Suffolks) well to the fore, retook Vellinghausen, captured guns and a whole regiment, completely restored the situation and rolled de Broglie right back, Soubise promptly conforming. The French casualties, over 5,000, were thrice Ferdinand's, and after this repulse the French never again ventured on a general action. Vellinghausen, coming on top of Minden, "cramped their style" effectively and so influenced the later campaigns appreciably. It is true that the British casualties fell mainly on a few regiments, but the infantry of the right and centre had played their part and stand in the same category as the First and Light Divisions at Salamanca, who have received the honour though only lightly engaged. The cavalry did not come into action, as Ferdinand's numerical weakness forbade a pursuit.

For the rest the story is mainly one of marches and manœuvres, with constant outpost fighting and encounters between light troops, if the main bodies did not come into action. What Napier would classify as "affairs" were numerous: on one occasion, when de Broglie was retiring in August, 1760, the Greys and Inniskillings overtook his rear-

guard and charged and broke three French squadrons, although the Greys were caught by heavy flanking fire from the French infantry: a little later the Highlanders and Maxwell's Grenadiers, supported by "Kingsley's" (20th, Lancashire Fusiliers), surprised the French at Zierenberg, and the Greys completed the discomfiture of the French by charging in among them. In June, 1762, again, there was quite a sharp fight near Fritzlar, where the 15th Hussars got engaged with superior numbers and had some difficulty in extricating themselves, but were most effectively assisted by the Blues, whose conduct together with that of the 15th aroused Granby to enthusiasm; "I can never sufficiently commend their gallantry and good conduct," he wrote. Not the least creditable of these smaller fights was one on the Fulde, near Cassel, in August, 1762. Though the river was so swollen that it could only be crossed by the men linking arms and so helping each other across, the picquets of the British Line regiments, 40 or 50 men to a battalion, waded across one evening and established themselves on the far bank. They were attacked after dark, beat off their assailants and proceeded to dig in, throwing up defences which stood them in good stead when early next morning they were attacked by two whole French regiments. Though greatly outnumbered they held out so well and were so effectively supported by the British guns from across the river that the French could not overcome them and retired, leaving many dead behind, when the 24th were hurried down to the river by Granby and waded across to the help of the picquets. These had had nearly 100 casualties out of not more than 500 or 600, and when the 24th arrived they had fired away nearly all their ammunition.

These "affairs," though comparable perhaps to "Emsdorff" itself, or to "Villers en Couchies" in 1794, or "Sahagun" in the Peninsula—all 15th Hussar "honours"—hardly reach the level of meriting separate recognition. Two actions on a somewhat larger scale, however, seem worthy of consideration. One, the attack by the Hereditary Prince in October, 1760, on a force which was advancing to relieve Wesel, which he was besieging, might be ruled out as a defeat, but it saw some splendid efforts by the Grenadier battalions and by the 20th, 23rd and 25th. They succeeded in surprising the French, and might have achieved a big success but for the devotion of the celebrated Chevalier d'Arras, whose cry of "A moi, Auvergne," warned his regiment at the cost of his life. Eventually overwhelmed by numbers and crippled by the exhaustion of their ammunition, they had to retire, and thanks to a devoted charge by the Royal Dragoons and 10th Hussars, who sacrificed themselves to help them, they got away. Defeat though it was, Clostercamp was a good fight.

Amöneburg, the other action of some scale, was the defence of a

bridgehead on the River Ohm, in September, 1762. Soubise attacked it in force and, after it had been stubbornly defended for some hours by a Hanoverian corps, Granby's "Reserve" of the Guards and Grenadiers relieved them and continued the defence. The French had the advantage of position and brought a great weight of artillery to bear, and the casualties of the defence were substantial; but all Soubise's persistency could not shake their hold.

It may be claimed, then, that the actions already honoured do not include all those worthy of consideration for battle honours. If none can quite compete with Minden for its combination of scale, importance and dramatic incident, the forces engaged at Vellinghausen were larger, and strategically its results were as important. It may indeed be said that, apart from the North American battles of 1775-1782, Vellinghausen is about the biggest British success which has not yet received recognition. Clostercamp may have to be ruled out as a defeat, but Corbach and Amöneburg seem as worthy of rewarding as Wilhelmsthal. Even if the regiments engaged in these three battles had all already received other battle honours for these campaigns the case for their recognition would still be strong: it is the hard case of the Guards and the five battalions of the "glorious reinforcement" already mentioned which makes their claim stronger. That a regiment whose grenadiers lost heavily at Warburg and Clostercamp and Amöneburg, and which itself bore the brunt of the fighting at Vellinghausen and lost heavily, should have nothing on its colours to record its three successful campaigns under Ferdinand of Brunswick is one of the anomalies which the Army Council's welcome reopening of the battle honours question gives a chance of setting right. Apart from the recognition of Vellinghausen, Corbach and Amöneburg, and of the possible extension of "Warburg" to the infantry, and of "Wilhelmsthal" to the Guards, a general campaign honour of "Westphalia," with the dates appropriate to each regiment, may be suggested as serving the same purpose as the "Peninsula," given to those regiments which served under Wellington but were so unlucky as to miss the battles honoured.

Space has not allowed a discussion of what these Westphalian campaigns did for Frederick. It is not a point on which Prussian historians have dwelt, for anything like a careful examination of them shows that his debt to British help was incalculably greater than ours to him; indeed, after Rossbac we really got nothing from him. But apart from that these Westphalian campaigns, though overshadowed by the victories of Clive and Hawke and Wolfe, were one of our most successful ventures in the Seven Years' War, and do seem to deserve a more substantial recognition than has as yet been given them.

THE FORTIFICATION OF THE FRENCH AND BELGIAN FRONTIERS

By LIEUT.-COLONEL H. DE WATTEVILLE, C.B.E., late R.A.

THE value of permanent fortification was greatly discredited as the result of the opening phase of the Great War. The speedy reduction of Liège and Namur seemed to prove so completely that its day was past that the far longer resistance offered by the much weaker fortress of Maubeuge came to be overlooked. Both in France and in Germany armaments and garrisons were removed from fortresses to be used in the field. Then in 1916 came the German attack on Verdun, where the old-fashioned permanent works offered a remarkable resistance to the enemy's heavy artillery. It is true that the famous Fort Douaumont was taken by the Germans, but they entered by the front gate and found as the sole garrison one N.C.O. and eighteen Territorial soldiers. Fort Vaux was also taken because it had virtually been abandoned by the French. The forts of Tavannes, Souville and Froideterre were never taken, although subjected to furious bombardment; Souville, indeed, became the scene of some ferocious hand-to-hand fighting in the work itself.

After the War a careful analysis of the capture of the works at Liège and Namur seemed rather to point to the conclusion that their fall was due to many causes besides the German heavy artillery.¹ It is even alleged that certain damage shown in illustrations taken subsequently to their capture may be ascribed to demolition work carried out by the Germans rather than to the effects of the heavy shells. Since the War, indeed, the case for permanent fortification continued to gain ground. After all, so it began to be argued, if the Germans were so confident of reducing all these fortresses in the space of a very few days, why did they put into execution the Schlieffen plan? Why did they run the risks inherent in a violation of Belgian neutrality? So after further examination of the old forts that had been bombarded the case for permanent works of defence seemed to rest on a still more solid basis than had ever appeared probable in 1915.

¹ For instance, it is said that some of the garrisons were asphyxiated by fumes of bursting shell owing to faulty ventilation.

Accordingly, since the Armistice, and as the afore-mentioned facts became more generally appreciated, the demand for a revision of the fortification of the eastern frontier of France gradually gained strength. In Belgium there was more reluctance to face the very difficult problem that arose, since it involved some serious political no less than financial issues. At first some further hesitation was also felt in France about embarking on so great an outlay of capital for works of passive defence ; it was not until French opinion was convinced that neither the League of Nations nor any military alliances would yield the degree of security which France claimed against the menace of another German invasion that it was decided to take in hand a complete scheme for the fortification of the eastern and north-eastern frontiers. There was also the important consideration that any such plan must depend largely on what the Belgian Ministry of Defence proposed to do in the matter, since it was obvious that if Belgium proceeded to defend her frontier against any aggression from the East this measure would profoundly affect the amount of work which France would expend on her north-eastern front, this front being far and away the most difficult to strengthen by fortification. If the Belgians decided to fortify their eastern frontier the French fortified lines would be shortened by a considerable amount.

Finally, somewhere about 1929, some form of agreement seems to have been reached between the two countries, whereupon paper schemes began to take a more definite shape. Financial and political dissensions in Belgium, however, prevented a decision being taken in that country as to the nature of the work to be put in hand. So in France it was not yet possible to put the whole project into execution.

At first the Belgian plan of 1929 resembled a revival of the scheme of fortification devised by General Brialmont, which had existed long before 1914. That is, there were to be two fortresses, one each at Liège and Namur respectively, while behind them stood the " national stronghold " of Antwerp. It was then proposed to fight on the line of the R. Gette. This plan was championed by the Belgian General Staff, who saw quite clearly that with an army numbering not more than 350,000 men it would be difficult to prevent a would-be invader from crossing a frontier 120 miles long and then marching well into Belgium before being brought to action. So they proposed, after fortifying the line of the R. Meuse, to prepare a defensive battle-field on the line Namur-R. Gette-Tirlemont-Diest ; for this line seemed to lend itself admirably to such a purpose. The " national stronghold " of Antwerp was to be greatly enlarged and provided with a fortified bridgehead at Ghent. The latter part of the scheme was, of course, regarded as

pointing to the certainty that military assistance would be forthcoming from England in case of a renewed invasion by Germany. The scheme aroused bitter opposition in Belgium, not only because it was considered to have failed in 1914, but also owing to the refusal of the Walloon (French-speaking) provinces of Belgium to see the fortifications placed so far back as the line of the River Meuse: by such a plan, the Walloons declared, they would be abandoned to the mercies of an invader coming from the East. In particular, the idea of the "national stronghold" of Antwerp—this town being entirely Flemish by nationality and speech—was most distasteful to them.

The outcry in the Belgian Parliament, maintained by the Walloon deputies, grew so insistent that the scheme was virtually abandoned. Simultaneously Lieut-General Galet, Chief of the General Staff, who was held to be the originator of the whole plan, retired. As a result of these dissensions and parliamentary debates, the Belgian scheme of defence has been thoroughly ventilated in public, and so is now known almost in detail—a very different state of affairs to that obtaining in France, where, in spite of some parliamentary discussion, great reticence has been observed as to the new works and their construction.

The revised Belgian plan, which was adopted after some hesitation and taken in hand in 1932, rests on the basic conception of two fortified lines of defence: the first is to be sited more or less on the eastern frontier; the second consists roughly of the revival of the defence of the line of the R. Meuse. The question of reconstructing the "national stronghold" of Antwerp has been allowed more or less to drop into the background. A few of the more modern Antwerp defences will, it is said, be modernized.

The new scheme comprises, first, a line of small works along the whole frontier which are designed to control the lines of advance into Belgium and to shelter machine guns, mobile light artillery and field guns. In conjunction with these works a considerable scheme of demolition and of artificial obstacles has been approved; this could be put into execution at the shortest notice. This line of defence, which runs from East of Arlon to Liège itself, cannot be of a very formidable nature, since the estimates devoted to its construction do not at present exceed 30,000,000 francs.

The line of the R. Meuse is another matter. Here the fortress of Liège is to be wholly modernized and extended. In some measure its strategic position is stronger than it was in 1914, since when the districts of Eupen and of Malmédy have been ceded to Belgium by the Peace Treaty. But Liège is no longer to be treated as a "ring fortress"; it is only the eastern side that is being reconstructed. Consequently it

must remain open to a turning movement from either flank. But the left, northern, flank is secured by the proximity of Dutch territory—if Dutch neutrality be respected—and the two great canals—Albert Canal in Belgium, Juliana Canal in Holland—while the right, southern, flank is covered by the new Meuse position. Nevertheless, if the whole project is carried out, it must inevitably constitute a serious drain on the man-power of the Belgian army, since it is conceived on so vast a scale. There are to be two concentric fortified arcs—first, the inner arc of the old forts brought up to date with greatly strengthened armour and concrete and provided with gas-proof shelters, deeply-dug communications, and so forth. Five miles further forward there are to be two entirely new works of some magnitude: the first at Eben-Emael, situated nine miles to the North of Liège, opposite the gap of Lixhe and close to the Dutch frontier; the second at Battice, twelve miles East of Liège. It has also been decided to construct a line of advanced works which is virtually coincident with the frontier line itself. This line is to be covered with a series of demolitions and obstacles to be carried out at short notice.

In addition to the main works of the defence, smaller armoured shelters are planned to command all the lines of approach lying between the forts. The whole is, in fact, a very complete plan based on the teachings of the Great War. It lies entirely on the right bank of the R. Meuse and measures some thirty-two miles along the line of the most advanced works.

At Namur a similar conception is being put into execution. The old forts on the right bank of the R. Meuse are alone being reconstructed, but they will be incomparably stronger, while their great weakness in 1914—namely, the amount of dead ground between and in advance of these permanent works—is being remedied by the construction of numerous machine-gun and observation posts.

The chief objections to the scheme that have been raised are the following:—

- (1) The advanced works on the frontier will not be strong enough to resist attack by any 8-inch howitzers such as a German army corps possessed before the Great War;
- (2) The gaps in the line of forts are such that "tactics of infiltration" on the side of the attack stand every prospect of success.

This latter contingency in particular has been met by the efforts being made by the Belgian Minister of Defence in certain directions, more especially by the creation of a special motorized division for frontier protection. This force would be provided, at a few hours' notice,

by the expansion of three newly raised battalions of "Chasseurs Ardennais," the latter being organized out of the inhabitants of the frontier districts. The battalions are strengthened by the allotment of armoured cars and of motorized artillery, and so form a division.

This solution of the Belgian problem has clearly facilitated the selection of the French projects for fortifying their north-eastern frontier, although it has not, according to French ideas, eliminated all need for defensive works on their northern side. Until the Great War attention had been paid almost entirely to the threat of invasion from the East and, still more, from the North-East, this latter frontier being by its nature and trace far and away the weakest frontier of France. Indeed, the Congress of Vienna of 1815 had purposely laid down this line in detail with the avowed purpose of leaving France open to invasion on that side. The restoration of Lorraine and, in a lesser degree, of Alsace to France has reduced the menace, but it still remains. Accordingly it is to this sector that the main programme of defensive work has been devoted.

Not much has been made known as to the details of the new works, so that it is impossible to give any such account of them as has been done in the case of the Belgian defences.

Their main conception is a fortified line following the frontier and laid out in depth. A great feature of the project is the abandonment of any visible infantry defences such as parapets,¹ while there is lavish provision of underground shelters (barracks as it were) supplied with gas-proof defence to all openings, lit by electricity, drained and supplied with water.

The original plan of fortifying the eastern frontier of France dates from 1874, and was conceived by the well-known engineer, Séré de Rivières. It depended on the construction of four great fortresses, Belfort, Epinal, Toul and Verdun. Behind these lay a line of secondary fortresses—Besançon, Langres, Reims, Laon, La Fère. These were supplemented by some lesser works to the North, such as Maubeuge. The main idea was to leave two great gaps into which the invader, coming from the East, would be "canalized" and then be open to attack in flank. To the extent that this plan caused Schlieffen to conceive his turning movement through Belgium it may be said to have been a complete success. Nevertheless it should be pointed out that the French decision to dismantle all the northern fortresses and to allow nearly all the secondary works to fall into decay was strongly combated by many authorities. Indeed this neglect of the northern

¹ This is one of the main lessons learnt by the French during the attack on the Verdun forts.

French fortresses is claimed to have clinched the matter of the violation of Belgian neutrality in 1914. General Brialmont, the designer of the defences of Liège and Namur, long ago declared publicly that, "if there had existed any risk of Belgian neutrality being violated in the past, the decay of the French northern works of defence rendered it a certainty." General Beziat, who had been Séré de Rivières's assistant in the great scheme of French fortification in 1874, addressed a remonstrance to M. de Freycinet, then Minister for War, as late as 1899, to the effect that "your infatuation in dismantling our northern fortifications is rendering the violation of Belgian neutrality not only a matter of common sense, but an act of destiny." Anyhow, the French have taken the lesson to heart and, even though the Belgians are fortifying their own eastern frontier, the very latest French plan provides for a reconstruction of Maubeuge under a new directorate for the fortification of the northern frontier.

The new French fortifications, although never described in detail, have been the subject of long discussions. Two views came into conflict, namely, that which favoured the construction of solid fortresses of great power; the other which championed the creation of "fortified battle positions." Two factors contributed to the solution adopted: firstly, the shorter duration of military training now in vogue in France, combined with the growth of mechanization; secondly, the fact that the Germans no longer possess the numerical strength to contemplate any invasion on the scale of 1914, or possibly even that of 1870. Besides, there now enters into the picture the possibility of an attack of these lines by armoured formations.

The nature of the new fortifications differ considerably according to the character of the district in which they are built. Thus from the North Sea to the Jura the general type of work to be erected will be as follows:—

- (1) From the sea to the R. Meuse. This stretch, being covered by Belgian territory, will be defended chiefly by small works, to be strengthened by inundations, taking advantage of cover afforded by forest.
- (2) Along the Lorraine frontier, particularly in advance of the Briey basin, where no natural obstacles exist, very heavily defended works are to be built, echeloned in depth and supported by the modernized fortresses of Metz, Thionville, Toul and Nancy: Verdun and the R. Meuse valley are specially fortified.
- (3) From Boulay to Bitche there will be a few works, supported by lakes and forest.

- (4) The northern frontier of Alsace is covered by a line of small works extending from Bitche to Weissenbourg; these are to be covered by a vast scheme of demolitions.
- (5) The course of the R. Rhine is protected by flanking fire from a series of concrete and armour redoubts as far south as Mulhouse. In rear the passes of the Vosges are each protected by small works.
- (6) The Jura, being difficult country and abutting on Switzerland, will be sufficiently defended by a few small works.

Much of this line can only be regarded as adequate for the delaying action of frontier troops, and must depend on the construction of field fortifications in rear; materials and tools for this purpose have been provided. Flanking fire plays the greatest role throughout. It is particularly noteworthy that the smallest works stand but a short distance from what might be regarded as the "main line of resistance."

The large works are remarkable for the exceedingly small targets which they offer, while the multiplicity of these targets is so great that the task of the attacking artillery will be greatly complicated. All these works can support each other by their fire. Railway lines have been modified to suit the needs of the new defences.

The two main nuclei of defence are the Fortified Region of the Lauter and the Fortified Region of Metz. In both these areas there have been constructed on the most probable lines of approach works capable of resisting attack by the heaviest artillery. Each is also to be garrisoned by an entire machine-gun unit, while it is armed with various forms of howitzers for close defence, and lastly some powerful guns for more distant work. The casemates are scattered, but connected by underground passages; they are all provided with vast underground shelters. The greatest attention has been paid to proofing these defences against gas. The distance between these "heavy" works varies from six or seven to nearly twenty miles. Between them have been constructed, at intervals of two to three miles, smaller works, built on the same plan, but only proof against normal heavy artillery. Finally, at every three-quarters of a mile or so there is a machine-gun nest. These defensive works have been supplemented by a generous supply of parks of engineer material, whereby it is hoped to complete the whole plan of defence at the briefest notice by means of field works. Lastly, the mobilization scheme applicable to all the adjacent country has been recast so as to admit of the most speedy occupation of all the permanent works by troops drawn from the neighbourhood.

There seems little doubt that the scheme can, at the moment, be regarded as a truly formidable obstacle to any invasion coming from the

North-East. But the French are still uneasy as to whether these lines may not be turned from the North : hence their appointment of the new directorate for the task of studying the fortification of their northern frontier. Then there remains the question of the future : will these lines be proof against armoured attack by night in ten, let alone twenty, years' time ?

It has also to be remembered that both Belgian and French fortifications virtually follow the frontier, and that they are thus open to artillery attack from across the border. Any invasion must infallibly begin with a battle along these advanced frontier defences. The question of the probability of surprise and of armoured attack thus becomes all-important to the defence.

It is clear that in neither the French nor the Belgian scheme has special provision been made for active defence from the air, though obviously the works are devised to be proof against aerial bombs.

In conclusion it may be of interest to give the system of command adopted for the new French defences ¹ :—

XV Army Corps Region—Fortified Sector of the Maritime Alps : Headquarters, Nice.

XIV Army Corps Region—Fortified Sector of Savoy : Headquarters, Chambéry.

Fortified Sector of Dauphiné : Headquarters, Grenoble.

VII Army Corps Region—Fortified Region of Belfort : Headquarters, Belfort.

Fortified Sector of the Jura : Headquarters, Besançon.

Fortified Sector of Colmar : Headquarters, Colmar.

XX Army Corps Region—Fortified Region of the Lauter : Headquarters, Saverne.

Fortified Sector of the Lower Rhine : Headquarters, Strasbourg.

Fortified Sector of the Sarre : Headquarters, Nancy.

VI Army Corps Region—Fortified Region of Metz : Headquarters, Metz.

II Army Corps Region—Fortified Sector of Montmédy and Defensive Sector of the Ardennes : Headquarters, Mézières.

I Army Corps Region—Fortified Sector of Maubeuge : Headquarters, Cambrai.

Fortified Sector of the Scheldt : Headquarters, Lille.

Defensive Sector of Flanders : Headquarters, Dunkirk.

¹ Published in *Le Matin*, 4 May, 1934.

THE DEATH OF THE PRINCE IMPERIAL

*Extracts from a letter written en route to Ulundi, 2nd June, 1879, by
Captain S. N. McLeod Nairne, 94th Regiment.*

THE Prince Imperial is no more. The poor boy, accompanied by Carey of the 98th—a Subaltern of the Quartermaster-General's Department, and a few of the Natal Horse, numbering in all only nine, left this camp reconnoitring yesterday afternoon. After going about eight miles they halted and off-saddled in a field near a Kraal, the Prince sending one of the men of the Natal Horse to an adjacent donga (ditch) to see if there were any Zulus concealed. He had scarcely given the order, when about two hundred Zulus sprang out of some long grass and fired on the Prince and party who made for their horses and bolted. In the retreat two men of the Natal Horse were shot dead and the Prince was assailed in the back as he was trying to mount his horse, the remainder of the party fortunately escaped arriving here at about 7 p.m. to unfold the melancholy occurrence. The consternation throughout the whole division is intense.

I was left behind at Koppie Allein yesterday, as was Bowlby also; consequently we did not get into camp until 7.30 p.m. and the first thing I heard was this most frightful news of the Prince's death. You have *no idea* what a nice fellow he was, he was universally liked by all out here. At Koppie Allein, Chelmsford and Staff had their camp quite close to the 94th and it was only the day before yesterday that I saw the poor fellow in the very prime of health and spirits outside his tent talking and laughing with our French friend, the correspondent of the *Figaro*.

When I heard of the news last night I got hold of *Figaro*, and he was very much excited and distressed about it, and considered that a force ought at once to be sent to recover the body. This Chelmsford did not consider prudent; but this morning at about 8 a.m. he dispatched General Marshall with the 17th Lancers, the squadron of the K.D.Gs, the Mounted Basutus, Natal Horse, and Natal Infantry to the scene of disaster. The 17th Lancers were only out for a few minutes when Chelmsford had them recalled in consequence of a message from Wood (whose column is not far off) to the effect that an impi of 15,000 was in the vicinity of the camp and that it was not wise to leave the camp without any Cavalry.

2 *p.m.* The news about the impy is all rot and some troops of the 17th have been sent after Marshall.

8.30 *p.m.* Shortly after I had written the above to-day, Marshall rode in with the Prince's body which was carried in an ambulance waggon guarded by the K.D.Gs and Lancers with drawn swords, with an advance escort of these corps in front and rear as well. There was very great excitement in camp as you may imagine.

I immediately got hold of Stanley, the *Standard* correspondent who went out with Marshall and therefore was able to give me as reliable information as one could possibly wish for and which is as follows :—

They found the Prince's body quite close (i.e. about four hundred yards) to the Jombokala River. The body was perfectly naked and had seventeen assegai wounds. He received *no wounds* in the back thus showing he must have stood his ground eventually and fought the enemy. He had no gunshot wounds about him—all assegai ones, and out of the seventeen none in the doctor's opinion that would have caused death bar two viz. one in the wrist which went through the pulse and another in the neck. The other fifteen wounds were about his chest and arms and one through his left eye ; but these, in the medical officer's opinion, would not have caused death. The poor boy's spurs and one sock were found close to his body, but a gold chain and locket he wore under his shirt (a small one just round his neck) was on him ; it is thought that the Zulus were afraid to touch this, they being very superstitious.

At the donga, where he was last seen by the sergeant of the Natal Horse, who was one of the party, was found his saddle with the left wallet torn away ; this is accounted for by his trying to mount his horse, and the wallet being rotten gave way, and he made a bolt for it seeing he was alone, and got between four and five hundred yards from the donga where he was overpowered by the Zulus.

The two privates of the Natal Horse were also found and buried close by where they lay.

The indignation in camp is great as there is no doubt whatever that if Lieutenant Carey and the Natal Horse had stuck to the Prince, which it was their duty to do, he, poor boy, would now have been alive.

Carey himself acknowledged when he rode into camp last night that he led the retreat, and the first he heard of it was when the sergeant rode up to him and said " I am afraid, Sir, the Prince is having a bad time of it " ; and even on this information Carey did not return to the rescue. Instead of there being two hundred of the enemy, as I informed you this morning, there were only between thirty and forty. Carey and these infernal curs of Natal horsemen never even fired a

shot ; had they stuck to the Prince they could, armed as they were, have easily killed the lot of the Zulus.

The Prince received a military funeral at 5 p.m. this afternoon. The whole Division was formed up in three sides of a square ; that is to say the whole Division was represented *bar the Colonial Regiments*. Only two companies of each Regiment and a similar number of Cavalry attended, otherwise the formation would have had no end to it. The Pipers of the 21st played a pibroch as the body on a gun carriage with an Artillery escort, the Prince's Corps, marched into the square. The pall bearers were Major Le Grice and five other Officers of his battery which is N. 6th Brigade. Chelmsford was Chief Mourner followed by his staff, Monsieur De Larche the *Figaro* correspondent and other pressmen. It was an exceedingly solemn sight.

After the funeral service General Newdigate called the Division to attention and gave the command " Royal Salute " as the body left the square in slow time and was taken to the Hospital tent where it is at this present moment, but will leave early to-morrow morning on an ambulance in charge of Military escort for Landman's drift *en route* to Durban. On the way down country the body will be embalmed and will leave Durban by the first mail steamer for England. I can't tell you how I pity the poor Empress, *her* only treasure in this world to lose his life in such a *miserable* manner. If it was in battle it would be different, but this is a dreadful business. There is but one opinion and that is all those fellows with the Prince ought to have made a stand until they got him safe through it.

I can fancy what a stir there will be in England when the news arrives.

Long of the Natal Horse, I am happy to say, was not one of those that bolted. He generally accompanies the Prince but on this occasion I find he did not. I am glad of this as he is a friend of mine and had he been there and acted as Carey and the other cowards I should have dropped his acquaintance.

There were several Kraals at Jombokala where the Prince was killed, and in one of them was found an old woman who informed Marshall's interpreter that she knew all about it, and that the men who did it were her sons and families, thirty in number and that they had made off at day break as they got wind of Marshall's visit. She also said that they heard that they had killed a great (Enkos) King. This shows you what wonderful scouts the Zulus are.

You will perceive that the account of this sad affair given by the cowards who rode back last night was not correct, and that in their hurry to get away they saw little or nothing of the affair.

THE OPERATIONS ON LAKE TANGANYIKA IN 1915

By COMMANDER G. B. SPICER-SIMSON, D.S.O., R.N.

On Wednesday, 28th March, 1934, at 3 p.m.

ADMIRAL SIR WILLIAM GOODENOUGH, G.C.B., M.V.O., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, said that Commander Spicer-Simson had had a very varied and adventurous career. He saw service in China; he was on the Boundaries Commission in North Borneo; he made a triangulated survey of the Upper Yangtze; and between 1910 and 1914 he was the Director of the Gambia Survey. In 1915 he was sent out with a small party of officers and men on the expedition to Lake Tanganyika, which, if it was a minor operation of the War, was nevertheless one of great importance.

LECTURE.

LAKE TANGANYIKA is a very considerable stretch of water. It is as long as England from Southampton to the Scottish border—about 420 miles; but not very wide—the average width is only 47 miles, though there are places where it is over 70 miles wide. The prevailing wind is South-East, and blows straight up the Lake, when quite a heavy sea can be encountered.

The question of taking boats out there depended very largely on the size and sort of boats, and upon the means of transport available. We did consider taking craft in sections, but that would have meant special construction and consequently delay, while time was regarded as being of first importance. The only thing to do, therefore, was to look round for the most suitable boats available. In making my selection I had to review the potential routes to the scene of action. There were three means of access to the Lake. One of these was by railway from Dar-es-Salaam, right through German East Africa; naturally that route was closed to us. A second route was up the Congo, and thence by railway to the Lake; that would have been very easy but for the fact that in the Crystal Mountains, where the Congo breaks through, there is a succession of falls and rapids, where the Belgians—this being in the Belgian Congo—had built a narrow-gauge railway which passed through a very large number of tunnels and little



THE OVERLAND JOURNEY—A LOG CAUSEWAY

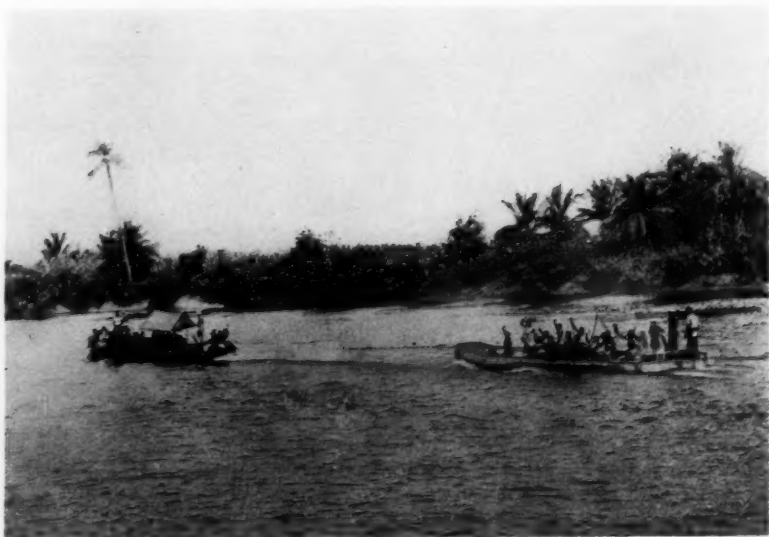


OXEN HAULING "TOUTOU" UP A STEEP GRADIENT

THE OPERATIONS ON LAKE TANGANYIKA 1915



LIFTING "MIMI" OVER SHALLOWS—UPPER CONGO RIVER



IN DEEP WATER—NATIVE CANOE IN TOW

THE OPERATIONS ON LAKE TANGANYIKA 1915

enclosed bridges. These would have limited any vessel that could have been got through to about 3 ft. beam.¹ We were left, therefore, with the only remaining route, namely—from Cape Town by railway to Fungurume (about 2,700 miles), from that point through the bush for a distance of about 150 miles to Sankisia, thence by rail (15 miles) to Bukama, and then about 200 miles down the river Lualaba to Kabalo, again entraining for the last part of the journey (175 miles) to Albertville, on the Lake.

Obviously the size of our boats would be limited by the stretch of railway, and the final determining factor appeared to be a certain bridge, but, as a matter of fact, when we reached that bridge the boats had to be taken off the trucks and slid along the track on their cradles. This was done by lowering them on to sleepers laid across the rails, which were well greased; the engine then simply towed them along through the bridge. Even so we had only about 7 in. clearance at the top.

THE BOATS AND THEIR TRANSPORT.

The boats we took with us were two small craft—the remainder of a batch of eight built just before the War for the Greek Government. These I named "Mimi" and "Toutou." They were 40 feet long and 8 feet beam, and had twin screws, and two 100 h.p. motor engines which used petrol. Their full speed was nearly 19 knots. As originally designed, they were not very suitable, because we had to mount some sort of gun on them. So we cut down the forecastle and mounted a 3-pdr. hotchkiss forward. The ordinary mounting for this gun made the centre of gravity too high, so this also had to be cut down, and the gun-layer, instead of standing at the gun, had to kneel down to fire it. Anyone who has ever handled a hotchkiss gun will realize how much more difficult it is to fire it from a kneeling than from a standing position. At we mounted a maxim.

The petrol tanks were on and underneath the stern sheets, and I was a little afraid that, since the hulls were only $\frac{3}{4}$ in. mahogany, rifle fire might penetrate to the tanks; so we fitted thin plates to protect them—incidentally these helped to compensate for the weight of the gun forward. When these various operations were completed, however, the boats drew nearly four inches more than before, and could barely do 15 knots. However, the fastest enemy vessel on the Lake was reported to do only 12 knots, so I was satisfied.

In order to prepare our road, we had sent out a part of the expedi-

¹ The railway was a 12 in. gauge, with tunnels about 4 ft. wide. It has since been enlarged.

tion in the steamer before the one in which we left. The order to organize the expedition was given on 22nd May, 1915. On 5th June the advance party—that is the road-making party—left England, and on 12th June we got the boats on board our ship, and the main party set forth. The advance party, having arrived, proceeded to build twenty miles of road; then they simply pushed on through the bush for another thirty miles, and began to build the next section. This plan was adopted because I knew that it would take a considerable time to get the expedition away from the base, and that the advance of the boats would be slow. So I proposed to complete the 30-mile gap, which had just been blazed, while I was waiting for all the gear to be collected before we could make a start with the boats, and while these were doing the first twenty miles.

The boats were carried in cradles specially made for them by Messrs. Thornycroft. These cradles were built to a design of my own, but certain details were altered by the experts, who assured me that the light wheels they put fore and aft and the 6-in. by 2-in. supporting beam would be quite adequate to stand any strains likely to be thrown on them. I had stuck out for a 12-in. beam, and I was right. We had not gone more than 200 yards before the 6-in. beam broke. It was impossible to get a 12-in. beam locally, so we had to be content with two 6-in. beams. Instead of the little wheels fore and aft, which also showed signs of buckling, I got hold of some truck wheels that the railway were using for transporting their sleepers from the bush; with these we made a sort of fore-carriage, the main wheels being shifted a little bit further aft. To tow the whole outfit along the roads we had traction engines. The boats' cradles were so fitted that they could be unbolted from their trucks for lifting on to the deck of a steamer or a railway truck.

THE JOURNEY TO THE LAKE.

On arrival at railhead, just beyond Fungurume, we had to unload the gear. We had 130 tons of ammunition, food and stores, which had to go with us. A good many of the natives who assisted us came from Rhodesia, and after we had been in the Congo for a little while we got a fair number of carriers, who took the smaller things. The lorry took the guns. While the expedition was being prepared for the long journey, work was started on the 30-mile gap in the road. Curiously enough some of my men suffered from snow-blindness at this time, although we were not far from the Equator. The fact was that the whole of the surface soil in the district is full of mica, and the brilliance of the reflection of the sun off that material produced the same effect as snow.

In making the road we also had to construct a good many bridges, and none of us knew much about that art. Lieutenant Wainwright, who had been ranching for some time in Southern Rhodesia, knew a little about bridge-building and road-making, but generally speaking we learned by experience. We made our first bridge by cutting down huge trees and laying them across the stream, fairly high piers being set up underneath; but when the first traction engine attempted to go across it just dropped through. Thus we learnt our first lesson, viz.: make the piers short for then the bridge is shorter and the piers less likely to fail. In the course of our travels we realized that there were other problems besides the actual building of the bridges. The time of year happened to be towards the end of the dry season, and the water-level of the streams was some way below the top of the banks; this meant that there was a considerable slope down to it on one side, and up from it on the other. The result was that the traction engine with its boat in tow got down on to the bridge, and then could not climb up again. The bridge was not wide enough for the other traction engine to pass, so the only thing to do was to build another, higher, bridge for the second engine. When it had got to the other side it helped the first traction engine to climb the bank; then the two engines were used to get the boats across. We built a very large number of bridges—over a hundred and fifty, if those of only 6 ft. or so are counted; but there were nearly a hundred of over 10 ft.

The great problem was to get the boats over the Mitumba Mountains, between Fungurume and Sankisia. There were many difficulties on this part of the route. At the top of the mountains the water runs off rapidly, with the result that the trees are small, and the local timber was inadequate to bridge the dry, but fairly deep, watercourses. However, we buried explosive charges in the two banks on either side and blew them up; the earth fell into the dried watercourse and filled it up to some extent. Meanwhile we collected as many of the local natives as possible,¹ and they were set to work cutting down trees and grading them according to length. The trees were laid in the gaps with their points inward and their butts outward, the longest being at the bottom, with smaller and smaller ones on top, until the gap was filled in. This sort of bridge looked quite satisfactory, but to walk on it while the boats were being taken over was almost impossible—it was like trying to walk on a spring mattress.

This section of our journey was about a hundred and fifty miles in

¹ The white man, for certain reasons, is not greatly esteemed on the Belgian Congo; however, the natives learnt that we were a different sort of white man, and within two days I had 1400 natives available.

length, so far as we could judge by bicycling along it and reading the cyclometers. I divided it into three fifty-mile sections, and at the end of each section we built a depot, which was guarded by three white men and one officer together with some natives. It was also necessary to build depots because a great deal of the ammunition and food we carried was marked "keep cool"—very good advice, but not easy to follow with a temperature in the shade reaching 118° , and in the sun 182° ; moreover, having cut down the trees, we were deprived of their shade. Another discomfort was the dust made by the traction engines. What with the dust and heat, it was thirsty work.

Our lorry was marked "load not to exceed 3 tons"; but we found an abandoned ox wagon, took off the wheels and built a trailer; into the lorry we put a load with guns and ammunition of about 6 tons, and into the trailer a matter of about 1 ton. Each load was then run out from the railhead to the first depot, fifty miles out, where it was dumped. That would occupy a morning and part of the afternoon; during the rest of the afternoon the lorry and trailer would come back again, reaching our base camp usually just after sunset. While the stores were being moved forward, the boats were also progressing steadily in tow of their engines—ordinary agricultural traction engines from Northern Rhodesia.

For many miles we had to cut down trees and we used the branches to bind the surface of the track together. As time went on we gained experience in bridge building. We used to build out sections from both sides of the river and leave a gap in the middle; then a few men with poles would be placed on the two ends of these sections to keep the river debris moving through the gap. Just before one of the trains arrived, the gap would be closed and the train would pass over; then the bridge would be reopened. The object of this was to avoid our bridges being swept away; previously we had two bridges swept away by the collection of debris against them.

Another obstacle which we had to encounter was wandering swamps—swamps which actually move about. As one sees them on the surface of the water they look rather like water-lilies; the Belgians call them "water cabbage." There is nothing very much above water, but these aquatic plants, which is what they really are, throw out long hair-like roots, sometimes 6 ft. in length, not into the ground, but into the water. So dense do they become that they form a kind of barrage until the weight of water is sufficient to roll the obstruction before it. Sometimes when we had built our road we found that it was in the path of one of these wandering swamps, and the traction engines could not get through because their fire-boxes were so low that the fire would have been put out. Then we had to build another road round the swamp.

The country through which we went was mainly mahogany forest—African rosewood—although every now and then we came to open downs. Now and then we encountered a forest fire, probably caused by the natives, or it might have been spontaneous combustion. In any case it was not at all pleasant to see a sheet of flame coming down towards us at thirty or forty miles an hour. The best thing to do was to follow the plan of the natives and light another fire in the path of the big flames, so that when the latter reached the spot there was nothing to keep them alive.

Another thing which gave us trouble was ant-bear holes, into which on occasions the wheel of one of the boats' cradles would drop. These holes would measure as much as $3\frac{1}{2}$ ft. in diameter, and were usually of some depth. Occasionally they were near the surface, and if any weight was placed on them they gave way. The danger was that, if a wheel dropped into one of these holes, the propeller shaft of the boat, which projected well below the stern, might be damaged. Eventually we got the natives to tap the ground ahead; with their finer senses, they could tell whether there was any hollowness, when they would scrape off the surface growth, thus marking the places to be avoided. Luckily no damage was done to the boats.

By and by we reached a spot where the surface was very sandy. I had been warned that there was a great deal of sandy country to traverse, so I had brought up from Southern Rhodesia sixty-four head of cattle. These beasts are excellent in sand, mud, swamps or anything of that sort, but they do not seem to be of much use for pulling up a hill. On reaching the mountains we put both traction engines on to one boat and went some little way up, but after a time we came to a stop. The traction engines could not get up the slope. Then we put the oxen in front of the traction engines, started up the engines and, as soon as the engines began to move, blew a whistle, which caused the oxen to move on, and so we got moving again. Very soon, however, the oxen got used to the whistle, and, incidentally, the hill got steeper, and they refused to pull any more. This was rather an impasse, and I learned afterwards that the Belgians were betting 100 to 1 that we would not get even half-way up—I wish I had known it at the time; I would have taken them on! Then the idea occurred to me of balancing the weight of the oxen against the eight tons or so which had to be pulled up. A purchase was attached to a tree, well stayed to others, about twenty yards ahead of the boat; one block of the purchase was made fast to the boat carriage, and the hauling part was made fast to a team of oxen facing down the slope. The oxen were then made to pull downhill, and in that way the boat came slowly up. We were still at no great height above the plain, and this same method had to

be repeated many times for each boat. Eventually we got to a point 4,200 ft. above the plain and 6,400 ft. above the sea. The top of the mountains was now beginning to come into sight. Here we actually got to a place where it was no longer very steep and we could use the oxen in the ordinary way. On 8th September we reached the summit.

We had thought that going down the other side would be quite easy, but that proved not to be the case. Our traction engines had no brakes, and there were no means of checking them from running away except that they were fitted to go astern. But on one occasion "Toutou's" traction engine, with steam on for full speed astern, was actually running away full speed ahead. Luckily it was checked before there was any serious accident. At one sharp bend in the descent the traction engine which was pulling "Mimi" suddenly turned broadside on, and the boat very nearly went over the edge. It was necessary to draw fires to prevent burning out the combustion chamber and tubes, and then to haul "Mimi" and the tractor up again by means of a cable. Fortunately we had plenty of natives with us to carry out the hauling operation by hand. Afterwards, instead of allowing the tractors to run down free, we used to bury a "dead man"—that is, several blocks of timber 20 ft. long—about 8 or 9 ft. in the ground, with a wire strapped round them and brought up to the surface, thus acting as an anchor; then by means of a hawser and bollard we managed to ease the traction engine gently down the slope.

At length we got to the bottom, in the valley of the Lualaba River, and only thirty-five miles from the river itself. Having reached that point we found ourselves running short of water. There were twenty white men and four hundred natives. We had been on an allowance of half a pint a day each, but now we had only ten gallons left. I sent out a lot of natives to scout for water, and luckily they managed to find it at a village, just as the traction engines had come to a full stop because there was not sufficient water in the boilers to allow us to keep the fires in. All the men from that village had gone on with our road-making party, but we bribed the women by supplying them with some gaudy waist-cloths—in that place a woman is regarded as over-dressed if she has two articles of clothing—and for these they were prepared to tramp a distance of eight miles carrying on their heads water from their well. They supplied us with sufficient for the traction engines, and we all had a wash and a bath and as much to drink as we wanted; that very night we were washed out of camp by a thunderstorm!

THE BOATS AFLOAT AGAIN.

That was the end of our troubles, for at Sankisia we reached the terminus of the fifteen miles of light railway to Bukama. There we

launched the boats into the Lualaba River—another name for the Upper Congo—and set forth to Kabalo. So, at last, "Toutou" and "Mimi" were afloat again after having been for four months high and dry, and the condition that they were in shows the care that had been taken of them by their crews. "Toutou" was absolutely water-tight, and "Mimi" only made 2 in. of water the first night.

We next proceeded to collect every native canoe we could lay hands on to transport our stores. The stores we put into them were mainly sacks of rice and flour, and so on. They went off in charge of Lieutenant Dudley, who could speak various Bantu dialects. Then we lashed underneath our boats four large empty petrol drums, two on each side of the keel. We wanted first to lift the boats as high as we could so as to load as much as possible into them and, second, to protect the propellers and shafts if we grounded. The river was very shallow at that time of year, so when we could not safely use the engines the natives propelled the boats with their long paddles until we reached deeper waters. If we ran aground—which we did continually—we used to get all the natives together, and at a given signal they would lift the boat and we would push her ahead with poles. As we were going down the river we were assisted by the current in getting over the shallows. On 9th October "Mimi" and "Toutou" went aground fourteen times in twelve miles—a record, I think, for H.M. ships.

When we reached the deeper water we cast off the empty drums and took some of the bigger canoes in tow. A little later I got a message from Dudley, who had gone on ahead to say that he had come across a shallow-draught river steamer with nobody on board but a caretaker. He sent word to ask whether I thought she would be of use to us. I replied that she would, especially as a Danish pilot, M. Mauritzen, who had been in the service of the Belgian Government, told us that there were rocks to be negotiated. Dudley thereupon went on board, but the native caretaker refused to let him take over the vessel; his orders, he said, were to keep her where she was until the crew arrived. Dudley invited him into the captain's cabin to discuss the situation and have a drink. He had arranged to be called away by one of his engine-room staff, and as he went out he locked the caretaker in; then he brought the vessel along to us.

We lifted the boats in their cradles on to the steamer's deck, using long trees cut down from the river bank and purchases as sort of extempore cranes. Thus we proceeded downstream to Kabalo, from which place 175 miles of railway ran up to the Lake. As a matter of fact the line stopped short thirteen miles from the Lake, and the Belgians assured me that it would be impossible to do the remainder of the

journey by rail because there were no more lines to be had ; but we took up the rails behind us for thirteen miles and laid them in front of us !

ARRIVAL ON THE LAKE.

The place where we reached the Lake was Lukuga, and our first camp was in the little bay called Kalemie Bay. The Belgians had not much telephone gear available, so I went across to the other side to see what could be done about it : they had a small motor-boat armed with a Lewis gun, and I had been told that there was a telephone connecting all the military posts on the German side. We annexed a matter of about twenty-five miles of telephone wires and two instruments from the enemy, which provided us with the communications we wanted on our side.

I must say a word about our magazines. We chose a place on the hillside where the natives were not likely to go, burned off all the grass and dug a hole about 8 ft. deep, putting our ammunition at the bottom. On the top of this we put foodstuffs and other stores, over which we built a roof of palm-leaf thatch, covering the whole with tarpaulins to keep it all cool. It was as well we did make the clearing, because a fairly big fire came along shortly afterwards.

Before launching the boats on the Lake we had to construct a harbour to protect them from the violence of the seas raised by the prevailing South-East wind. Just before we arrived there two Belgian boats had been washed up on the beach. To have launched our boats in the ordinary way would have taken five or six hours, during which time the German ships might have come along and shelled us ; so I devised a method of running them on railway trucks from their place of concealment into 10 ft. of water, and in each case the launching was accomplished in twenty minutes. An extension of the railway line was run out on to the breakwater, then down a fairly steep ramp into the Lake, until the lines had 10 ft. of water over them.

The Germans showed considerable interest in what was going on, and we learned that natives had reported to them that we were building a bridge across the Lake—this would have been no mean achievement, since it is 2,000 ft. deep in places. The enemy knew that we were up to something, however, and used to shell us. During one of his bombardments one of our trucks, which was full of stones, got smashed, but we left it where it was as a reinforcement of the breakwater. It was these attacks which caused me to revise the method of launching the boats to which I have already referred. Eventually they were floated out of their cradles on Christmas Eve, 1915. We had left England on 12th June, so that it had taken us five and a half months to get the

boats to the Lake. But it only took us five and a half weeks to get command of the Lake.

INLAND WATER ENGAGEMENTS.

The next day being Christmas Day we had a rest. It was the first time in the whole expedition that we had all been together, because hitherto the road-making party had been ahead of us. We had mounted the guns as soon as the boats were in the water—and, on the following day, it was my intention to carry out some trials to see whether the gun mountings were all right. It was Sunday, and at 6 a.m. all hands had mustered for prayers when one of the Belgian officers came up from the signal station to report that the fastest of the German steamers was heading straight towards the port. I completed the service, and then sent the hands off to prepare for action.

At 11 a.m. we steamed slowly out of harbour. Forty minutes later we were sighted by the enemy vessel, "Kingani."¹ She went ahead and turned away, so I steered to cut her off. At this time she was only about 3,500 yards away, and I noticed that she had only one gun, which was mounted in the centre-line of the ship, just in front of the wheel; immediately behind the wheel was the funnel, and immediately behind that the boiler-room skylight, and abaft that a small deck cabin. It was obvious, therefore, that she could not fire astern; so I manœuvred to get astern of her. She opened fire on "Mimi," and we returned her fire almost at the same moment. It was a naval action in miniature. By this time we had closed to about 2,700 yards, and the "Kingani" could no longer get her gun to bear on "Mimi," so she shifted her fire to "Toutou." But both boats got into a position from which they could fire on the enemy, though he could not fire on us. Actually "Toutou" never fired a round; but "Mimi's" first round carried away the "Kingani's" mast; then we fired twelve more rounds; afterwards we discovered that, including the one on the mast, she had received eleven hits. There was a choppy sort of sea, and Petty Officer Waterhouse, who was firing from "Mimi," had to be on his knees to fire, yet he made twelve hits out of thirteen rounds!

At 11.58 a.m.—eleven minutes after the action had commenced—the "Kingani" stopped, hauled down her ensign, and someone on deck waved a white handkerchief. It appeared that everybody on deck except one seaman had been killed, and that a shell had burst in the engine-room. This seaman did not know what to do, so he waved the white handkerchief. We tried to board her, but the sea was too much for us, and we damaged "Mimi" very considerably in the attempt—

¹ The original name plate of this vessel is in the Royal United Service Museum.

she had already been damaged by the recoil of her gun. Therefore the "Kingani" was ordered to go full speed for the shore, and we trained our gun on her. They declared that she was sinking, but actually she did not sink until just as she reached the harbour, when she capsized before we could run her aground, but nobody was lost. Her two officers and three seamen of the four carried had been killed and there were left only two engineers and one white seaman, besides some of the native crew. Later that same day the dead Germans were brought ashore and buried. A guard had to be placed over the graves to prevent the Askari, who still retain their anthropophagous habits, from digging them up.

We parbuckled the "Kingani" on to the beach, rolling her up broadside on. She had a 6-pdr. gun which had been seized from a ship in the Indian Ocean by the "Königsberg"; this I shifted aft. Then we strengthened the deck forward with bits of old iron and mounted a 12-pdr. semi-automatic gun which had been sent out to protect our base. The "Kingani" was placed under the White Ensign and renamed the "Fifi." The new gun was really much too big for the ship, which was only 56 ft. long, while the gun itself was 12 ft. long; when we fired it right ahead the recoil stopped the way, even when she was going at full speed.

There were still three German ships to be accounted for in these waters: the "Hedwig von Wissmann" and the "Graf von Götzen"—both larger than the "Kingani"—and the "Pangani," which was the "Kingani's" sister ship.

Although once or twice we heard fictitious stories about German ships having been seen, nothing happened until 10th February, except that a storm came up from the North-East and the "Toutou" was sunk. On that day the "Hedwig" was sighted from our look-out station at M'Toa, fifteen miles North of Kalemie. The vessel was first seen at 6.15 in the morning, and I estimated that she would be near us at 8.30. At 8 a.m. I put out in the "Fifi," followed by "Mimi." We sighted the "Hedwig" at 8.40. As soon as she saw us, she put her helm over and made off for the German side of the Lake. We had to chase her for about thirty miles before we got within range. I noticed that the "Hedwig" had only one gun—a revolving six-barrel 1-pdr.—which could bear astern; so I told "Mimi" to close to about 2,700 yards, which was about as far as her gun would fire with any accuracy, and to keep firing at the "Hedwig." The "Hedwig" had three alternatives: she could turn and attack "Mimi," or she could go straight on, or she could yaw from side to side so as to bring all her four guns to bear. She chose this third alternative; but as soon as "Mimi" saw

the flash of the guns she put her helm hard over, and by the time the shell pitched she was some yards away.

After about an hour and a quarter, during which "Mimi" evaded damage by continuous zig-zagging, the slower "Fifi," with her heavier gun, got within range and opened fire. We fired a couple of rounds, and "Mimi" signalled "your rounds are going over." As a matter of fact, the captain of the "Hedwig" said afterwards that our second shot had carried away the end of the bridge, although it struck the water ahead of him. However, I ceased firing for about half an hour, and we pushed on as hard as we could go. At last we got to a range of about 5,000 yards, which was quite a reasonable one for that gun. We fired six rounds, and got on the target with our second shot, after which we used high explosive shell. These semi-automatics can fire 28 rounds a minute, and in two minutes the "Hedwig" burst into flames all over. When we ceased fire we could hardly see her through the smoke and flames, and her forecastle was under water. "Mimi" picked up the survivors—fourteen white men and quite a large number of native crew. Incidentally we picked up the captain and the ensign. The ensign, I believe, was the first German ensign that was captured in a naval battle in this or any war, and the "Kingani" was the first German warship that was brought into harbour as a prize and transferred to the Royal Navy.

The sinking of the "Hedwig" was an occasion for great native rejoicing, because the German flagship had amused herself, for no known reason, by steaming up and down the coast of the Belgian Congo and, whenever a group of natives were seen together, just dropping a shell amongst them. The natives accordingly hated the vessel, and as the action had taken place within sight of the shore—never more than 25 miles away—they had seen what was happening. They lighted fires and, when we got back to harbour, the native soldiers were loosing off their rifles, and the wives of the chief came to greet me as I landed. Their method of saluting is rather uncomfortable. The idea is to pick up a handful of earth and present it to you, indicating that their land is yours, but when, as in this case, they pick up handfuls of gravel and throw them at you it is not so pleasant.

This left the "Pangani" and the "Graf von Götzen" to be dealt with. One day, the "Pangani" mistook a small Belgian motor-boat armed with a Lewis gun only for "Mimi" or "Toutou," and promptly turned and fled towards the German coast; not looking where she was going, she ran on a rock. I went out in "Fifi," and we dropped a few shells to smash her up.

The "Graf von Götzen" was a more formidable problem. The

"Kingani" was only 56 tons, the "Hedwig" 160 tons, but the last enemy was a 800-ton vessel, and she was armed with four 10-cm. guns from the "Königsberg." We got torpedoes out from home, with dropping gear—the Admiralty had some difficulty in finding dropping gear, because it was out of date—but it seemed that we could never get at her. At length I asked the Admiralty whether they could supply us with some seaplanes. They said they could let us have the seaplanes, but no pilots, as all the pilots were wanted for the Western Front. We got some Belgian pilots, who had been running the mails up the Congo, and they went over and tried to bomb the "Graf von Götzen," but she would not come out of harbour. One morning, however, when we went over to bomb her she was not in the harbour any longer. For the next three weeks we were feverishly searching every bay, harbour and mouth of a river along the Lake from end to end, being fired at from the coast because the natives had got it into their heads that everything afloat was German. It was not until some three months later that we discovered that the Germans had come to the conclusion that the Lake was not a healthy place for them. Their smaller boats had disappeared one by one—they were not quite sure where they had gone to—and so they had just taken the "Graf von Götzen" out of the harbour and sunk her.

Our expedition went out with twenty-eight officers and men all told, and returned intact. We had not a single casualty of any sort, unless we must count a Sub-Lieutenant who, being threatened by a German native, hit him with his fist, and, his finger catching on the native's teeth, it had to be amputated because septic complications set in. Having finished our job, we disarmed our boats and handed them over to the army to do what they pleased with them. Actually they used them as transports. Then we made our way home. Lieutenant Wainwright and five other officers were awarded the Distinguished Service Cross, and most of the men got the Distinguished Service Medal. Thus ended the domination of Lake Tanganyika by the Germans.

There was no discussion.

The customary vote of thanks to the Lecturer was passed by acclamation.

GUN-RUNNING IN SOUTH AFRICA

By W. L. SPEIGHT.

BEFORE Europeans had been settled in South Africa for many years they recognized that to keep firearms out of the hands of the natives was their safest policy. This prohibition soon created a profitable but illicit trade in firearms, and the unscrupulous white, who sold the arms, only to be used later against Europeans, were in fact, traitors to their countrymen, and they earned the accidents that sometimes befell them. Thus, in 1835, when British settlers in the Eastern Province were suffering from the thefts and attacks of the Kaffir tribes, a gun-running expedition met with misfortune. The small coasting schooner "James," then engaged in running guns to the natives, sent a boat with a cargo of firearms to the mouth of the Chalumna River, in what was then known as Kaffirland. The boat was beached and the crew met by a number of natives. At first negotiations proceeded smoothly, but presently a dispute arose and the sailors were attacked. Only two of the boat's crew succeeded in returning to the ship, and they had to swim out to it.

Many muskets made in Birmingham passed into the hands of the Kaffirs; but these were not arms captured in battle from soldiers or in raids on military camps, they were obtained from traders in Grahamstown, and among others implicated in the traffic was a Hottentot official at the Kat River missionary settlement.

At one time the sale of gunpowder was unrestricted. Traders obtained it at about 1s. per pound and sold it to the Kaffirs at the rate of a teacup of powder for two cows, valued at £3. Obviously, this was a lucrative trade. It became so extensive along the northern and north-eastern borders of Cape Colony that Sir Benjamin D'Urban stopped such activities by recalling all trading licences. Then the sale was restricted to Government stores.

In spite of this restriction, for many years afterwards Port St. Johns was a place at which illicit firearms were landed. The Gaikas and many other tribes possessed hundreds of muskets, but fortunately for the British soldier these natives were poor marksmen. Had they been

better shots the swift tactics adopted by Colonel Harry Smith would have proved less successful. But still, although they knew they were poor shots, the Kaffirs wanted the guns, and their reason for this desire was that guns were a sign of the Europeans' dominion over the wilds, and they wished, even inefficiently, to share in that dominion. It seems, moreover, that in those days public opinion was not against the gun-runner, for natives who bought firearms, and even cannon, harmed themselves more than their enemies. This, however, is not the view expressed in official and other documents in the Cape archives; Army officers, in particular, regarded the question as most serious, and held this trade to be one to be suppressed by any means. Romantic novels have been written around the trade, and the excellent relations between chief and gun-runner have been stressed; but it was an activity to deprecate, which is also to be said of modern gun-running.

When, in 1872, the Bantu tribes near the diamond fields armed themselves with weapons obtained illicitly, the Europeans in the Orange Free State and Griqualand West, thoroughly alarmed, spared no effort to stop the trade. In Jacobsdal district, Free State officials twice captured wagons conveying firearms without the necessary licence. Later, three wagons laden with guns were captured. This confiscation became the subject of diplomatic correspondence between the Free State and the Cape. A few weeks later twenty Basutos, all but one armed, were arrested and refused to surrender their guns, producing passes to prove the weapons had been purchased openly on the diamond fields. After a skirmish the Basutos escaped under the cover of night.

In the early days of British rule in South Africa flintlock muskets were manufactured in Birmingham for the native trade at 4s. 9d. each; and in the years about 1850 gun-runners were importing percussion muskets at 10s. 6d. each. The natives paid for them in cattle at the rate of two or three per musket. This liberal rate of payment recompensed adventurers for high freightage costs, hazardous inland transport, and the risks of the undertaking. Earlier still, about 1820, the Korannas and the Griquas had even offered one animal in exchange for a pound of gunpowder, on which terms farmers were often willing to trade.

Such barter forced the two Dutch republics to pass many acts prohibiting traffic in firearms and ammunition; but often these laws could not be enforced. Unscrupulous traders working the country occupied by the Bangwaketse, Bakwena, and Bamangwato tribes, by trekking over the road nearest to the Kalahari, were not very likely to be observed. Hunting and trading went together. The life was so adventurous and profitable that it attracted many young men. Even hunters like Gordon Cumming were implicated in the trade, for it is

known that in the 'forties he traded muskets to Sekgoma, Khama's father, for ivory.

Cheap arms were usually run to the natives, except when they insisted on being provided with the most modern weapons. The Bechuanas and Bavendas soon became expert marksmen, as were most of the natives employed in hunting. The practice of arming native servants was another means of passing firearms into native hands. The Hottentot clans outside the Cape borders generally possessed ancient weapons, but missionaries who declared they should be allowed to carry arms occasionally gave them better arms. Moshesh's people obtained large quantities of arms, some of which were run in from Natal, whence they also obtained powder and shot. But the danger of such supplies being cut off remained, and in 1859 that chief experimented with the manufacture of gunpowder in Basutoland. He was not notably successful. Like the other native potentates, he was dependent upon Europeans for the repair or manufacture of such offensive material, and while the native chiefs were sovereign rulers, they always welcomed the men with the requisite skill and traitorous lack of conscience.

Natives were rarely adept with the use of heavy arms like cannon. None the less, Moshesh, among others, let it be known that he was eager to equip his armies with such weapons. As a result, in 1859 three men removed a six-pounder from a Government store in Bloemfontein and put it on to a wagon. But they did not get far with it. The cannon was recovered and the conspirators severely punished for their exploit. Then Secoconi, the famous Northern Transvaal chief, offered a handful of diamonds to the man who would deliver a cannon to him. This gun was to be used against the Boers. As time went on this offer was increased. Later, some of the chief's councillors were sent out to interview traders likely to help. Eventually William Finaughty, a famous elephant hunter and trader, grew interested in the undertaking, and he decided to make the attempt. In 1875, at Port Elizabeth, he bought three old ship's cannon of very short range: next, at Grahamstown, he mounted them on carriages and wheels and had a brass mould prepared for casting solid iron cannon balls. From Grahamstown Finaughty trekked to Kimberley, whence he tried to run in the first cannon, leaving the others in reserve for later attempts. The cannon was hidden under a false floor of the cart. It travelled safely in that position for many miles, until a Transvaal police party held up the trader. It was necessary to get rid of the gun, and Finaughty succeeded in doing so. It is interesting to recall that this was the weapon unearthed at Mafeking during the siege. Finaughty did succeed in getting the remaining two cannon into Matabeleland, where they

were sold to King Lobengula for about £200 of ivory. These cannon were found by the British in the King's kraal and are now displayed in Bulawayo Museum.

At an earlier period John Dunn, who had considerable influence with the Zulus, is believed to have run guns into their territory. The Zulus were just as anxious as the other tribes to own muskets and rifles, but they wisely discarded them in war time, for their old small arms would have impeded rather than assisted the evolutions of Cetewayo's impis. During the Hottentot wars in South-West Africa, especially in 1904 and 1905, the natives urgently needed arms and ammunition. At that time the current price was a sheep for one round of Martini-Henri ammunition. Obviously, those who could run in consignments made handsome profits. Then, as now, official efforts to control the traffic were not completely successful. In spite of the strict control maintained in South Africa, high-class modern weapons are passing into native hands, and probably always will do so.

In the old days of the wars between the Free State and Basutoland, there was a time when the Basutos were even better armed than the Free State troops, although the latter carried superior rifles. The present day Basuto favours small arms, and revolvers of all periods are finding their way into those mountain fastnesses. Even muzzle-loading revolvers, almost seventy years old, are being sold here for a few shillings apiece. Nevertheless, when he can get them, the Basuto prefers the most modern weapons, and often acquires them. It is a peculiar fact that soon after the Imperial troops in South Africa were equipped with the short service Lee-Enfield rifle, similar weapons were possessed by the Basutos. This tribe paid three large oxen for a Martini-Henri rifle and it offers similar terms for a modern rifle. But, with the government of the surrounding territories now invested in one authority, this illicit trade is not carried on so readily as was the case.

Perhaps the most daring piece of gun-running to be recorded in South Africa was that connected with the Jameson Raid, when over 3,000 Lee-Metford rifles, some machine guns, and the necessary ammunition were sent from Kimberley to be smuggled into Johannesburg. The rifles were packed in oil drums, with a central space containing oil, so that oil would flow when the taps were turned on.

THE AIR FORCES OF FRANCE

By MAJOR OLIVER STEWART, M.C., A.F.C.

(In compiling this article the following authorities have been consulted :—Jane's "All the World's Aircraft" ; Whitaker's Almanac ; The Armaments Year Book ; "The Times" ; "The Morning Post" ; "Aviation" (of New York) ; "Le Danger Aérien et L'Avenir du Pays" ; "L'Aviation et la Sécurité Française" ; "La Guerre de l'Air" ; "Les Ailes" ; "L'Aéronautique" ; the Air Ministry's "Report on the Progress of Civil Aviation" ; and the Air Ministry's "Résumé of Commercial and Technical Information.")

FRENCH air policy has from the first been subjected to military rather than naval influences. In September, 1928, a decree was signed by the French President creating an independent Air Ministry and merging the naval and military air forces ; but unofficially military dominance continued, and the change had little practical effect until, in March, 1933, the Air Army Constitution Bill defined the functions of the French Air Ministry. The Ministry was charged with the organization, training, administration, and mobilization of the active and reserve air forces, including those of the troops of occupation in extra-metropolitan territories, subject in the case of the Naval Air Service Afloat and the Naval Air Service Co-operation Units to special arrangements made by inter-ministerial decrees ; with the examination and control of air material and accessories, preparation for industrial mobilization in connection therewith, and the purchase of such material and accessories as are destined for the air forces ; and with the survey, establishment and operation of airways and airports, the organization and control of public air transport, the meteorological and signal services, and the development and supervision of private flying. In addition, it is responsible for the drafting of air laws and the preparation of international agreements in connection with them.

It will be seen that the scope of the French Air Ministry is particularly wide. It contains, in addition to the secretarial department, departments dealing with technical development, supply, personnel and commercial aviation. The French Army of the Air is numerically large. The quality of its equipment has varied between wide limits, but has, on the average, shown a rather lower level than the equipment of the British and American air forces. Prototypes of startling efficiency have been built from time to time ; but they are either not introduced into the service squadrons, or else their introduction is too long delayed. Efforts are now being made, however, to improve the quality of the

French air equipment—with, it seems, a fair measure of success. The work that was done for the purpose of competing in the Coupe Deutsch air races has already had its effect in improving service designs, and the French are now as advanced as the Americans in such technical details as retractable undercarriages and variable-pitch airscrews. France is also working energetically in the direction of increasing the speed range of both her military and civil aeroplanes. The French Government recently acquired from the British patent-holders the rights to use the slotted wing and its associated devices, such as the slotted trailing edge flap, the slotted aileron and the interceptor. The rights are to be enjoyed by all French aircraft constructors, civil and military. In Great Britain the Government has acquired the rights in this invention for the Royal Air Force, but not for civil aircraft; consequently civil aircraft constructors must pay a royalty if they use it. The rather curious position has been reached, therefore, that foreign designers are making progress in the direction of increased speed range by incorporating in their machines a British device which British designers are not using.

NUMERICAL STRENGTH.

The numerical strength of the French Army of the Air at the beginning of the present year was the same as in 1931, so that the stories of large increases in strength must be discounted. The figure is 1,667 first-line aeroplanes. In addition there are 708 aeroplanes and seaplanes in service in training schools, and 20 more machines with a total of 8,160 h.p. will shortly be in use in naval vessels now building. As for the immediate reserves, there is some dispute as to the exact definition of the term. According to the definition by the French delegate to the Preparatory Commission for the Limitation of Armaments, the immediate reserve should include machines necessary for the working of units in peace-time. Under this definition the immediate reserve is constituted in France by spare machines whose number is fixed periodically according to the types of aeroplanes. At present it varies between 20 and 50 per cent. of the first-line machines.

The Army of the Air's numerical strength may be tabulated as follows :—

		<i>At Home.</i>		
	<i>Unit, etc.</i>		<i>No.</i>	<i>Total h.p.</i>
In tactical units	.	.	1,210	.. 630,122
In training schools or formations	.	.	637	.. 334,102
Total		.	1,847	.. 964,224

<i>Overseas.</i>				
In tactical units	395	..	197,367	
In training schools or formations	44	..	19,882	
Total	439	..	217,249	
<i>Ship-borne.</i>				
In tactical units	62	..	31,800	
In service in training formations	27	..	11,850	
Total	89	..	43,650	
Grand total of first-line aeroplanes			1,667	

FIGHTERS.

The aeroplanes which constitute the equipment are of a wide variety of types; some of them, such as the "Colonial" type, having no exact counterpart in the British air force. In the single-seater fighter group the leading constructors are Blériot, Dewoitine, Morane-Saulnier, Bernard, and Nieuport Delage. In form the machines range from the biplane to the monoplane, with the sesquiplane—a type with a full top plane and a very small and narrow bottom plane—enjoying a good deal of popularity in between. For the single-seater fighters the twelve-cylinder V water-cooled engine is the most popular, although air-cooled radial engines are also being used. Hispano-Suiza are the leading manufacturers of water-cooled, and Gnôme-Rhône of air-cooled, engines for the French Service. The following is a list of single-seater fighters of the 1933 period, with an indication of the general construction of each one:—

Blériot 510, biplane: one 500-h.p. Hispano-Suiza.

Dewoitine D 27, high-wing monoplane: one 500-h.p. Hispano-Suiza.

Dewoitine D 500, low-wing monoplane: one 500-h.p. Hispano-Suiza.

Hanriot H-110 C1, pusher low-wing monoplane: one 600-h.p. Hispano-Suiza.

Lioré 43 C1, high-wing monoplane: one 500-h.p. Hispano-Suiza.

Bernard 260 C1, monoplane: one 500-h.p. Hispano-Suiza.

Morane-Saulnier 225 C1, high-wing monoplane: one 500-h.p. Gnôme-Rhône k-9.

Morane-Saulnier 325 C1, low-wing monoplane: one 500-h.p. Hispano-Suiza.

Mureaux 170 C1, high-wing monoplane : one 500-h.p. Hispano-Suiza.

Nieuport Delage 62 C1, high-wing monoplane : one 500-h.p. Hispano-Suiza.

Nieuport Delage 122 C1, high-wing monoplane : one 650-h.p. Hispano-Suiza.

The French have paid more attention to the two-seater fighter than most other countries, although this type has never been used to form the mainstay of the fighting squadrons. They have also developed the multi-seater fighter, which relies upon fire power rather than performance. This is a conception of the fighting aircraft over which the majority of specialists disagree : it is generally held that the aeroplane must fight with its performance in speed and climb rather than with its guns. But the French have produced some notable multi-seater aircraft mounting a number of guns and intended to fight rather with these than with speed, climb and manœuvre.

GENERAL PURPOSE TYPES.

The French reconnaissance and observation aeroplanes are comparable with what are called in the Royal Air Force general purpose aircraft. Some idea of the form of construction, the engine power and the engine type, will be gained from this table of general purpose machines in the French service in 1933 :—

Breguet 19-8, general purpose biplane : one 700-h.p. Gnôme-Rhône Mistral.

Breguet 27-3, reconnaissance sesquiplane : one 650-h.p. Hispano-Suiza 12 kbrs.

Potez 25 T.O.E., general purpose biplane : one 450-h.p. Lorraine.

Potez 39 A2, observation high-wing monoplane : one 500-h.p. Hispano-Suiza.

Potez 50 A2, reconnaissance biplane : one 700-h.p. Gnôme-Rhône 14 kbrs.

Weyman 80 R2, reconnaissance biplane : one 650-h.p. Hispano-Suiza.

Nieuport Delage 580 R2, reconnaissance high-wing monoplane : one 650-h.p. Hispano-Suiza.

A comparison may be made between the British Hawker Hart—the prototype of so many different types¹ at the present time—and the

¹ The two-seater fighter is known as the Hawker Demon; the Army Co-operation type as the "Audax"; and the Fleet Reconnaissance Spotter as the "Osprey."

French Latécoère. The chief characteristics of these two machines are as follows :—

	<i>Hart.</i>	<i>Latécoère 49 R2.</i>
Wing area, sq. ft.	348	283
Weight loaded, lbs.	4,320	5,260
Maximum speed, m.p.h.	184	171
Climb, mins.	8 mins. to 10,000 ft.	15 mins. 37 secs. to 16,400 ft.
Accommodation	Crew of two.	Crew of two.
Engine	One of 525 h.p.	One of 650 h.p.

The system of procuring new aeroplanes for the French Army of the Air has many points of interest. Whereas in England firms may build military aeroplanes as a speculation and on their own initiative with a reasonable chance of their being ordered by the Air Ministry if they show outstanding good qualities, in France the Section Technique draws up fairly rigid specifications to which the manufacturers must work if they wish to compete for Government orders.

To this the manufacturers will closely adhere, putting in a " dossier " to the stress section of the technical department. Later on the designs are examined by a commission, and the constructors' representatives are enabled to advocate the acceptance of their tenders. The successful constructor then builds a prototype, which is ordered by the contracts department. The actual construction of the machine is controlled by the technical department through its inspectors, and the test flying is done at the Government test station near Paris.

At the end of the War the French used mainly the Breguet 14 A2 as its general purpose type. This aeroplane had a 300-h.p. Renault engine, and a top speed of about 116 m.p.h. It was followed by the Potez type 15, with a 370-h.p. Lorraine engine. The famous Breguet 19, which has been responsible for many notable long-distance flights, appeared in 1922. It has been fitted with engines varying from 400 to 600 h.p. As a matter of historical interest its main characteristics may be given. They are as follows :—

Wing area	530 sq. ft.
Weight empty	2,546 lbs.
Useful load	1,781 lbs.
Speed at sea-level	135 m.p.h.
Speed at 16,400 ft.	122 m.p.h.
Climb to 16,400 ft.	21.7 minutes.
Service ceiling	24,000 ft.

A development of the Breguet 19 may be said to be the strange-looking Bréguet 27. This all-metal biplane is of what has been called

"spinal" construction. A riveted high-tensile steel girder running fore and aft forms the fuselage, and another similar girder running transversely forms the main spar of the small lower plane and gives the points of attachment for the undercarriage. The body is a lightly-built duralumin structure housing the gunner's cockpit, and terminating just aft of it. Thus the gunner enjoys a wonderfully good field of fire by reason of the narrowness of the fuselage behind him.

Something may now be said about the general organization of the French Army of the Air, and the disposition of the units. The Inspector-General is responsible for the maintenance of the training standard in the senior command of the service, and for the entire training of the Army of the Air; consequently upon him devolves the main responsibility for the flying efficiency of the French forces. So far as the units operating over land are concerned, we find that seven reconnaissance regiments and six groups are at the tactical disposal of the Ministry of War. This Ministry may also call upon two fighter regiments, while the bombing regiments are retained by the Ministry of Air. It will be seen, then, that there is retained in the French organization a strong likeness to the original dual service plan. The Air Ministry is essentially the director of aerial attack, implying by that term bombing attack upon ground targets, while the Ministry of War enjoys good facilities for reconnaissance and protection. The significance of the placing of the fighter regiments under the Ministry of War is that these may be employed for the defence of the reconnaissance machines.

Special regulations have been made covering the interchange of staff and other personnel between the three Ministries. The medical and ancillary services continue to be concentrated under the Ministers of War, Marine, and Colonies.

The tactical aviation unit is the *escadrille*. The *escadrilles*, with the exception of three in the Colonies, are organized into regiments and independent groups. There are two types of aviation, the first, *homogène*, and the second, *mixte*. In the first group are the fighting, day-bombing and night-bombing regiments, and in the second are the observation regiments, which are composed of observation, reconnaissance and fighting *escadrilles*.

Each *escadre de chasse* consists of headquarters, a headquarters company, two or three *groupes*—each of two or three *escadrilles*—an air artificer company, which is the workshop department, a photographic section and an aviation park. *Escadres de bombardement* differ in that each night-bombing regiment has a searchlight section.

The *escadres d'observation* have each one *groupe de reconnaissance*, one *groupe de chasse*, and two or three *groupes d'aviation de renseignement*

—each with two *escadrilles*—two photographic sections and, in some cases, a searchlight section, in addition to headquarters, a headquarters company, air artificer company, and aviation park. There are still other aviation regiments in North Africa, with four or five *groupes* of two *escadrilles*, and four or five photographic sections. An independent *groupe d'aviation* consists of headquarters, a headquarters company, two or three *escadrilles*, an air artificer company, a photographic section, and an aviation park.

Establishments vary considerably and are subject to changes made by the orders which appear from time to time. On the average the *escadrilles de chasse*, or fighter squadrons, have ten first-line aeroplanes. The reconnaissance squadrons, or, as we would say, general purpose squadrons, and the bomber squadrons have eight.

The naval arm has been taken over by the Air Ministry as in England, but—also as in England—the air personnel in ships remains under the Ministry of Marine. At the Air Ministry the department dealing with Naval Aviation is called the *Direction de l'Aéronautique Maritime*. This is organized as follows :—

Section A deals with the preparation of general plans in conjunction with the Naval General Staff; regulations for naval aeronautical operations; execution of armament plans; mobilization preparations; anti-aircraft defence; air regulations and international conventions.

Section B deals with recruiting; decisions as to numbers required by the Naval Air Arm and the *Division Technique*; training and administration; bases and supplies are also dealt with by this section. Preparation for war plans and mobilization are two matters dealt with under the last two headings. There are also sub-departments for personnel, supply, and administration.

The *Régions Maritimes* are as follows :—

1ère Région.—From the Belgian frontier to the right bank of the Couesnon—Headquarters: Cherbourg.

2ème Région.—From the right bank of the Couesnon to the Spanish frontier—Headquarters: Brest. This region also includes two districts, Lorient and Rochefort.

3ème Région.—The Mediterranean coast from the Spanish frontier to the Italian frontier—Headquarters: Toulon.

4ème Région.—The Mediterranean coast of Algeria and Tunis—Headquarters: Bizerte. This region also includes two districts, Algeria and Tunis.

The naval aviation unit is the *escadrille*, of which there are three

categories : fighting, reconnaissance and bombing. Fighting *escadrilles* have an establishment of fifteen seaplanes or landplanes ; reconnaissance and bombing *escadrilles* have twelve. *Groupes* are formed of varying numbers of *escadrilles*. The *flottille* is the highest formation, and includes a varying number of *groupes*. The naval aerostation unit is the airship, of which there are two types : (1) escort airships, of about 10,000 cubic metres capacity, and (2) scout airships, of about 3,000 cubic metres.

CIVIL AVIATION.

Before discussing French civil aviation it will be as well to give a brief reminder of some of the natural characteristics of the country in order that the commercial air line position may be better understood.

France is a country of 212,660 square miles area, or about three and a half times the size of England and Wales. Its population is 41,840,000, of which about one-third live in towns. Originally French commercial air lines were run by separate companies in much the same way as in the early days in Britain ; but the formation of the single Government-assisted company, " Air France," has brought all the companies under a single control. The policy in civil aviation is now that of maintaining large fleets of machines, for running high-speed services both for passengers and for mails, and of establishing long-distance routes linking France with her colonies. The best way of setting out the position of French civil aviation will be to give the budgetary expenditure upon it and then to pass on to the mileage flown, to the number of machines in service, and to the types.

In 1933 the total civil aviation vote in France, with the sovereign taken at par, was £1,684,033. Of this amount £1,465,260 was allocated to the direct subsidy of air lines. These figures take into account the French air services in South America. The grand total for the French air estimates in 1933 in millions of francs was 1,996.2, and in 1934 the estimate was 1,654. As to mileage flown some comparative figures may be of value :—

	<i>France.</i>	<i>Germany.</i>	<i>Italy.</i>
Miles flown :			
1932 . .	5,487,512	5,712,117	2,889,452
1933 . .	5,986,011	6,580,035	2,960,133
Route mileage :			
1933 . .	21,450	17,228	9,523

British conditions so far as air transport is concerned are very different from those found in other countries, but for those who wish to make an offset comparison it may be added that the British route

mileage in 1933, including the Empire services, was 15,187, and the miles flown in the same year 2,638,000.

France is well supplied with airports, and some of them are exceedingly well laid out. In France many of the civil airports also house military air units, and the first civil airport, Le Bourget, was used for the dual purpose. The present installation at Le Bourget was planned in 1919; the work started in 1920, and it was completed in 1922. By 1924 the airport was handling as much traffic as it could take, and by 1927 it was decided that it was too small. A plan for enlarging and modernizing it was drawn up by the Société des Grands Travaux Aéronautiques et d'Équipement des Voies Aériennes. This recommended that the military base should be removed and the buildings centralized. There seems little doubt that Le Bourget will eventually become an efficient and attractive airport. Some idea of the need for its expansion is given by the passenger figures for the past four years. In 1930 the figure was 38,709; in 1931, 43,683; in 1932, 63,996; and in 1933, 84,182.

The total number of civil aircraft in use in France, including all groups, was given in the House of Commons by Sir Philip Sassoon as 1,116 against the 939 of Great Britain. Civil aeroplanes comprise backward types and exceedingly advanced types. The three-engine design is widely favoured for passenger carrying, although the French use single-engined machines more than most other countries for the carriage of passengers over routes on which there is no water to be crossed and the country is mostly favourable for forced landings.

The speeds of the French aircraft on the regular London-Paris services are slightly in excess of those of the British line, and they will in the near future be placed still further ahead when new types which have been ordered come into service. These new aeroplanes will have a maximum speed of more than 200 miles an hour. The French South American mail service has often been held up as the finest example of air-line pioneering that there is, and the claim cannot be regarded as exaggerated. It was on this line that the tradition was developed that the mails must go through in all weathers, and that so long as the service is being developed the risk of loss of machines and personnel must be faced.

Some performance figures for French high-speed carrying aeroplanes will now be given, and the chief aerodromes in France will be tabulated. It will then be possible to attempt a general estimate of the position of France in aviation, and of the probable trend of her future aeronautical development.

Two high-speed mail carriers may be mentioned as follows :—

	<i>Wibault-Penhoët</i> 365-T7.	<i>Latécoère</i> 300.
Type of machine	Low-wing cantilever passenger monoplane.	Transatlantic long-range postal flying boat.
Crew	—	Four.
Passengers	Ten.	—
Engines, number and h.p.	Three air-cooled Titan Major ; each of 350 h.p.	Four Hispano-Suiza 12N br. 12-cyl., water-cooled, in tandem pairs ; 650 h.p. each.
Span	74 ft. 1 in.	145 ft.
Weight empty, lbs.	8,334	24,911
Disposable load, lbs.	6,306	25,795
Max. speed, m.p.h.	157	130
Climb to 1,000 m., mins.	5 mins. 19 secs.	—
Ceiling in feet	17,056	15,092
Cruising range, miles	—	2,983

The following are some of the more important French airports :—

Abbeville (Drucat), Avignon (Pujaut), Berck-sur-Mer, Bordeaux (Teynac), Casablanca (Cazes), Cherbourg, Clermont-Ferrand, Dijon (Longrie), Fez, Hourtin (Louley), Hyères, Istres, Lille Ronchin, Le Mans, Montélimar (Ancône), Nancy (Essey), Nantes, Nîmes (Courbessac), Paris (Le Bourget, Villeneuve-Orly, St. Cyr), Perpignan, Reims (Champagne), Rouen (Le Rouvray), Saint Inglevert, Saint Nazaire, Strasbourg (Entzheim), Strasbourg (Neuhof), Toulouse (Franczal), Valbonne, Vichy, Villacoublay Morane.

Seaplane Bases :—Berre, Brest, Cherbourg, Hourtin, Marseilles, Perpignan, Saint Raphaël.

In spite of the large number of airports in France, private flying as it is known in England has not been very extensively developed. There are over a hundred clubs ; but the amount of active flying done by them is probably not very great. France has always paid great attention to air-record breaking and racing, and the Coupe Deutsch races are certainly the most important air races, technically, held in Europe, and probably in the world at the present time. Hitherto French constructors have been the chief competitors, although there has been a single British entry : some of the French machines have shown exceedingly advanced features, such as variable pitch airscrews—some of them

automatic in operation—retractable undercarriages, and speed-range devices. For the 1933 Coupe Deutsch the following machines were built :—

Albert A-140, monoplane : one 190-h.p. Regnier.

Farman-Renault, monoplane : one 165-h.p. Renault Bengali.

Farman-Farman, monoplane : one 400-h.p. Farman.

Kellner-Béchereau 28V.D. : one 350-h.p. Delage (monoplane).

Potez 53, monoplane : one 250-h.p. Potez.

The Potez was the winner.

Two questions are of outstanding importance when French aviation is being considered, and they are asked by nearly everybody who wishes to gain a true estimate of its position. The first is how strong is French military aviation, and the second is how advanced, technically, is French commercial aviation ?

The answer to the first question seems to be that French military aviation is numerically strong, but that it is not sufficiently advanced in quality of equipment to permit it to take an unquestioned place at the head of the air services of the world. French commercial aviation is being run on lines which are of value to the country because it maintains the constructors in business and supplies a reservoir of well-trained pilots ; but it is costly, and the State is called upon for a high subsidy.

As to the future, it appears that advances in technique both in Service and civil flying are to be expected, but that the policy of subsidizing commercial aviation on a large scale is not likely to be altered.

SOME PROBLEMS OF A TECHNICAL SERVICE

By WING-COMMANDER G. W. WILLIAMSON, O.B.E., M.C., R.A.F.

On Wednesday, 21st March, 1934, at 3 p.m.

AIR MARSHAL SIR ROBERT BROOKE-POPHAM, K.C.B., C.M.G., D.S.O.
A.F.C., A.D.C., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, stated that Wing Commander Williamson was specially qualified both by training and experience to discuss technical developments. He was trained before the War as an engineer; during the War, having served in the infantry and then become a pilot in the R.F.C., he joined the technical department, first at the War Office, and then in the Ministry of Munitions, where he was mainly responsible for engine production. Since the War he had been mainly concerned with the repair and maintenance organization, not only in this country, but in Egypt, Iraq, and India, and was then in the technical service at the Air Ministry.

LECTURE.

THERE is a note on the first page of every copy of the JOURNAL which says, "Authors alone are responsible for the contents of their papers." That particularly applies to this lecture, because the opinions I shall express are purely personal. They are, moreover, based on the experience of the problems which confronted the Royal Air Force in the late War; they do not assume inside knowledge of preparations being made to meet another such emergency.

In the Royal Air Force, as in all technical services, many of the problems of the late War will be even more acute in any future conflict; but one important factor will be radically different—that is, the time which will be available for preparation. In 1914, British troops came into action in less than three weeks after the declaration of war; next time, British aircraft may be defending London even before any such formal declaration has been received. This process of speeding up makes preparation in peace the one essential condition for success in modern war. Without it we may see London without aircraft at a time when they are most needed, just as we saw British artillery without shells at a crisis of the late War.

History shows clearly that in the past all war problems were

tactical, and battles were won by strength and courage; the soldier picked up shield and spear and was ready to go into action at a day's notice. Later on, Napoleon required three weeks of preparation for his campaigns. His problems were strategical: "an army moves upon its stomach"; and "to give time for the organization of supplies, provisions for . . . twenty days were collected at various towns in Piedmont. . . . Readers of military operations," continues Hamley, "are often insensible to the vast preparations required for the commencement of war between great Powers."¹ In 1914 we were not prepared at all for a war between great Powers. Feverish organization, following upon the shell shortage, took over nine months to secure delivery of supplies in bulk. Nineteen months after the declaration of war the United States had not, from American contracts, delivered a single aircraft or aero-engine in France. This would seem to imply that not days, nor weeks, but years of preparation are necessary before technical warfare can be successfully prosecuted between great Powers. War problems are no longer tactical, solved by action on the field of battle; nor strategical, requiring twenty days' preparation. They are industrial. In the future, as in 1918, grand strategy means organization of the whole nation for war—an organization that may take five years to perfect.

It is necessary to assume that we have passed from a post-war to a pre-war period, and that the next great war looms in the future. It is also reasonable to assume that the fighting Services are to be prepared for technical warfare. If they are not so prepared, or if it is taken for granted that there will be no more great wars, these Services may as well be disbanded as fighting forces and become merely policemen of the sea, land and air. Consideration of present-day Service problems has been based, therefore, upon the following assumptions:—

- (1) The possibility of war within the next generation;
- (2) As in 1914, we may have but little notice before it breaks out;
- (3) Warfare will be technical, mechanical, and scientific;
- (4) The fighting Services must be prepared for such a war.

TECHNICAL WARFARE.

Since 1917, armies have moved, not upon their stomachs, but on wheels and wings; and warfare has become technical. To that end the Services are provided with highly complex weapons. Of all equipment, aircraft is the most complex; and the Royal Air Force is the

¹ Hamley, "Operations of War," page 16. Fourth Edition.

most technical of the Services. Large reserves, high production rates in war, long preparation, and skilled repair personnel are necessary for all of them. But complex equipment suffers from well-marked disadvantages, each of which must be countered by the Services. For example, the manufacture of such equipment must necessarily be spread over a long period of time; to obtain deliveries off a greatly increased output may take two years. The life of the equipment is short, and wastage high: the average life of an aircraft in war is two months; the wastage 600 per cent. per annum. When stored it deteriorates or corrodes rapidly. It requires constant modification to keep it up to date; it may become obsolete overnight. In the case of the Royal Air Force, capital is immobilized by aircraft reserves, and by the huge sheds required; a few bombs might destroy half a Service reserve.

Highly skilled labour is necessary for manufacture or repairs. Mass production industries now employ only a small proportion of skilled craftsmen; and skilled labour may prove to be the limiting factor in the production of technical equipment. For aero-engines special machinery is required: in the late War there was never enough, especially grinding machinery, despite constant heavy shipments from the United States. This was the limiting factor then, even when skilled labour was more plentiful. In present designs very high-grade materials are necessary, and these are only available in small quantities. Again, technical equipment requires highly specialized personnel for maintenance, repair and general organization.

Briefly, the war expansion of a technical Service takes many times as long as that of non-technical armies.

It has been said that the strength of a chain is that of its weakest link. Key men, key operations, key materials, and key machine tools are the weak links in the chain of production of complicated material. During the War the output of one of the most efficient factories in the kingdom was totally held up by lack of the grinding machinery already referred to. While it was being imported from America hundreds of engines waited for weeks, complete in every respect but that of connecting rods. Again, the design of all the rotary engines under construction in England had to be changed because at that time ball-bearings were being sent from Sweden, and several consignments were sunk by submarines. These are instances of weak links which might well fail again when a great strain is put upon productive resources.

All these disadvantages can be expressed in terms of a series of major problems. Each problem involves a conflict of two claims or desirabilities: for example:—

- (1) Production or progress : shall we standardize present types of aircraft to ensure high production, or shall we continue to improve the breed ?
- (2) Large reserves or high production : shall we spend money on stocks of aircraft, or mobilize industry now to meet the wastage of war ?
- (3) Personnel or material : ought we to have large establishments of skilled personnel who could repair used equipment ; or large establishments of material, and scrap a proportion instead of repairing ?
- (4) Skill or simplification : shall we train airmen to a high degree of skill, or devote time and thought to simplifying the product ?
- (5) Present money saving or future economy ?

These are some of the problems of the technical Services. Are we, as a nation, preparing for war by overcoming these disadvantages ?

The author of *Wehrwissenschaft*, a penetrating German military study, says the next war will be a "contest of material" ; a French writer¹ expresses the view that "all states have already decided upon a general mobilization of industry, and constituted councils to draw up plans and keep them up to date." All military authorities probably have been engaged for years in perfecting such plans ; but unless they are permitted to organize industry as well as the Services the nation is unprepared for war. Industry, organized too late in the Great War and goaded into strenuous exertions and expenditure long after hostilities had broken out, is not entirely satisfied with the nation's preparedness for a future war. To quote a well-known engineer : "Already our rulers are being accused of preparing for the next war. This is most unjust, because it is a thing they have never been known to do. Between 1860 and 1899, they prepared for the Indian Mutiny of 1857. Between 1904 and 1914 they prepared for the South African War of 1899 ; and if an outsider can form an opinion, they are now trying to insure against 1914. If there is one thing certain in an uncertain world, it is that 1914 will no more come again than will 1857 or 1899. The obsolete mind always prepares for the past." ² This is a grim jest, but, if there is error in it, it lies in the last sentence—"the obsolete mind prepares for the past." If the Services are preparing for 1918 all may be well. It is no use preparing for the leisurely, non-technical wars of pre-1914 ; war will never be like that again.

¹ M. Francis Delaisi, in "What would be the Character of a New War," p. 187.

² Major F. L. Watson, M.C., T.D., M.I.Mech.E., "Obsolescence and Organization," p. 704 of Proc. Inst. Mech. E., May, 1931.

It must be the responsibility of the technical Services to decide the policy and to take action, within approved financial limits, about five years before war breaks out, to ensure the following requisites :—

- (1) That the peace establishment is large enough.
- (2) That factories are organized to meet war wastage, and also an expansion programme.
- (3) That reserves of equipment, including spares, are available to meet demands during the period in which factories are working up to war output.
- (4) That repair depots are able to meet a large proportion of the war demand when the need is greatest.
- (5) That the organization of technical staffs, and the qualifications and numbers of specialist officers, should be suitable for technical warfare.

All these questions are bound up in one, the problem of supply ; and for the solution to every problem or question of policy there should be one acid test : how will this affect supply in a contest of material ? How will a peace establishment of, say, 500 aircraft in this country fare in a contest of material ? One morning we may read in our daily paper that war has been declared ; but even before that London may have been attacked by high-speed bombers flying through the night at great altitude, and British aircraft may have been in action, perhaps over the Continent as well as in defence of London. There will be losses—ten aircraft a day, maybe ; in fifty days of war we may have no first-line aircraft left. It is reasonable to assume that the enemy will lose his aircraft at about the same rate, although the actual figure will depend on the intensity of his air effort. But even so our potential enemies might have hundreds of aircraft left, while London would be defenceless. If we were prepared for war the strength of the Royal Air Force in the British Isles would be at least equivalent to that of any Continental Power. It would cost money—perhaps £10,000,000 a year, and the alternatives of present saving or future economy have to be balanced. But is it true economy to save money on aircraft when an aircraft war is not only possible but probable ?

WAR WASTAGE

When war breaks out our losses may be ten aircraft a day. That does not sound much compared to 1,000 men killed and 4,000 wounded, an average daily casualty list during the late war. We could replace 1,000 men killed, but at present the replacement of ten aircraft per day, or, indeed, ten of any similar complex weapon, is impossible. Yet this rate of wastage is no mere assumption. The Royal Flying Corps began

the battle of the Somme on 1st July, 1916, with 400 serviceable aircraft, and supplies of 200 monthly were available. In four months, 800 aircraft were lost, or 50 per cent. of the serviceable aircraft in each month. During 1917 and 1918 the percentage of wastage over the whole of the Royal Air Force was much the same. It cannot be assumed that air fighting at the beginning of a great war would be any less intensive than it was when the late War ended ; the reverse is probable, because an intensive air effort will probably be made by both sides.

Losses on both sides will be increased by new risks : even if we keep our aircraft in their sheds, sheds and aircraft may be destroyed by bombs ; increased night flying means more crashes in landing in the dark—voluntarily or otherwise ; fighting in formation results in greater losses on both sides than single combat.

War wastage is made good from three sources :—manufacture ; reserves ; and repairs. How would industry, in a war of material, meet the wastage demand ? Assuming, still, a peace establishment of 500 aircraft, and a replacement rate in peace of 50 aircraft monthly ; assuming, also, that a contractor is one of ten aircraft firms dividing this demand between them ; then his regular monthly output of military aircraft will be five or six ; he may also be meeting a civilian demand for another five or six aircraft. War comes and the makers of aircraft are required to meet a wastage of 250 aircraft a month, or 25 for each factory—five times peace-time output of Service aircraft. The difficulties that will arise can easily be forecasted ; they will include :—

- (1) Skilled labour ;
- (2) Housing ;
- (3) Machinery ;
- (4) Material and accessories ;
- (5) Dilution personnel.

(1) *Skilled Labour*.—Some aircraft factories still cover much of the ground occupied during the War, and machinery then obtained is available for increased output. This increase would, however, be but a small proportion of the amount required in a future war, and manufacturers will have to consider other expedients. Of these the most obvious is that generally resorted to in periods of stress—the employment of two or more shifts of workmen so that the machines are running almost continuously. The maximum possible development of this expedient is when there are three shifts of men in each day, the working day being split, therefore, into three periods of eight hours. When this stage is reached machinery is running twenty-four hours a day, and special arrangements have to be made in order to allow time for maintenance and such overhauls as may become necessary in heavily stressed

machinery. This expedient, if the skilled labour can be obtained, would give a threefold increase in output.

(2) *Housing*.—It is easier to propose the application of such an expedient as the three-shift system than it is to make the administrative arrangements to carry it out. Assuming that the Government and manufacturers are able to find sufficient skilled labour to keep their machinery running continuously, the next problem will be that of the accommodation of the workmen. Skilled craftsmen have taken years to reach that stage of their work, and cannot be expected to give of their best unless they are adequately housed. They cannot well be moved about the country arbitrarily and separated from their families indefinitely. It will be necessary to arrange that housing accommodation close to their work shall be available when the emergency arises. Such accommodation cannot be much further than walking distance from the factory; with three shifts, men will be coming or going off at hours like midnight or 4 a.m., when normal means of transport cannot be available. It may be necessary for the State to plan, if not to build, barracks or married quarters to accommodate skilled labour close to the great aircraft firms. In the War both skilled craftsmen and dilution personnel could not be accommodated close enough to the factories, and it was often necessary to hold up the expansion scheme until land had been obtained, and houses planned and built.

(3) *Machinery*.—Since the War vast quantities of production machinery have been made in, or imported into, this country, but it has been specially designed for the mass production of components of small motor-cars, and in the main is entirely unsuited to the production of large aero-engines. An exception must be made in the case of grinding machinery, which in the War was the limiting factor on aero-engine output. To-day most works, probably, possess sufficient grinding machinery to cover a considerable programme of aircraft output, although it may not be "balanced up" in any particular works for the output required. "Balancing up" of the machine tools in a factory which employs hundreds of machines must be taken in hand immediately the output requirements are known. As soon as this output is determined every section of a factory must be checked and tested to confirm that the flow will not be restricted at any point. Restriction means that a department or set of machine tools cannot deal with the number of components reaching them from another set of machine tools; for example, if a foundry could turn out a hundred castings a day, the output of the factory would be much less if the grinding machinery available could handle only half that number. Considerable additions

and reorganization of machine tools are necessary as soon as increased output is demanded.

Unfortunately, mass production by motor-car firms has developed to the extent where the transference of human skill and thought to mechanism results in the installation of enormous single machines responsible for a number of operations upon a single component. For example, at one mass-production works a single machine, costing £150,000, carries out almost every operation to convert a rough billet of metal into the completely machined and assembled cylinder block. Such a machine, while resulting in a huge output of motor-car cylinder blocks, would be useless for aero-engine work; and to that extent transference of that factory to aero-engine work would be impossible. It must, of course, be admitted that full employment could doubtless be found for such a firm in the manufacture of motor transport for the Services; but one cannot assume that motor-car works could necessarily be turned over to the output of aero-engines or aircraft.

One other limiting factor may be mentioned. Aero-engine crankcases are produced from a drop forging machine, which replaces the complex casting and machining of war days. There are, however, very few such machines in the country, and the manufacture of any one of them would take nearly twelve months. Either we must be satisfied with the small output to be obtained from heavy drop forges or, alternatively, revert to the slow methods of casting and machining now ten years out of date.

(4) *Materials and Accessories.*—There were many troubles with materials and accessories in the War. A famous firm had the monopoly of stainless steel for valves, and absorbed the whole output of its makers. When valves in other engines gave so much trouble as to result in forced landings on the wrong side of the trench lines, it became necessary to appropriate the output of the stainless steel maker and to allocate it amongst other aero-engine contractors. But the output which was sufficient for a single firm was totally inadequate for a large number, and it was many months before the steel firm could be expanded to supply sufficient metal for the necessary output of valves of this material.

Aluminium, now produced in this country in much larger quantities, had then to be strictly rationed. Some items, such as aero-engine crankcases, could not use any other material on account of their size and weight; but the use of this metal for less necessary components resulted in a shortage of aluminium for carburettors. Aluminium first, and carburettors afterwards, held up the output of engines. Again, magnetos had been made on the Continent; and an industry had to be initiated and developed in this country before another anxiety to

supply officers was removed. One more instance will suffice: two firms in this country manufactured ball-bearings; the whole of their output was insufficient for requirements, especially as aero-engine designers used ball-bearings wherever they thought fit, choosing arbitrary dimensions, with no reference to whatever size and types of bearings were most in use elsewhere. One of the factories augmented its supplies by shipments from the main factory in Sweden; but the enemy became aware of this valuable traffic, and his submarines sank several ships upon which the output of aero-engines depended. It became necessary to specify ball-bearings in aero-engines only when no other type of bearings could be employed, and to standardize dimensions to the utmost.

In war we must avoid a diversion of labour and skill from more essential manufacturers to something relatively unimportant. If manufacture is to be simplified when the emergency arises, now is the time to decide the extent to which aero-engines and aircraft could be a little heavier, a little less highly finished, a little less complete with complex instruments. Reduction in weight of engines is achieved by the use of high-grade steels or other metals. In the United States all aero-engine makers are bound to use commercial grades, and this ensures that no manufacturer will produce a light-weight engine solely by using expensive metals. In time of emergency there will then be large reserves of standardized materials available.

(5) *Dilution Labour.*—Supposing that aircraft makers are fortunate enough to find sufficient skilled labour to work three shifts, houses for their craftsmen, machinery to "balance up" for the increased output, and the requisite high-grade materials and complex components; even then the output is only increased threefold, yet a six-fold increase is required. That increase is met partly by expanding existing aircraft factories, and partly by reorganizing factories which have never previously produced aircraft. This would take months, but in a war lasting for years that increase would have to be faced. When the extension is completed there will be no skilled craftsmen available. The proportion of all-round craftsmen in motor-car firms to-day is small, and in their place large numbers of semi-skilled men and even women are employed, each one upon a single mechanical operation. This class of labour cannot be transferred to aircraft or rather aero-engine work without a period of instruction in the new and more difficult class of operation. No all-round craftsmen could be trained and given sufficient experience during the period of war; and the only remaining alternative is to split up the functions of skilled aircraft workers amongst semi-skilled labour. But even for an expansion involving only semi-skilled labour there

may be considerable difficulties when all great industries and all three fighting Services might be requiring dilution personnel at the same time. Such a situation would seem to call for a centralized authority to control and allocate skilled labour and, to a less extent, dilution labour, in exactly the same way as the Ministry of Munitions controlled materials, machinery and, in the last resort, labour itself, during the War. This is, in reality, conscription of labour. Because our national character is strongly opposed to all forms of conscription, our governments usually begin to organize too late. Unless plans are completed well in advance of the outbreak of war unfair allocation of labour, unnecessary movements of personnel, and consequent dissatisfaction on both sides is bound to follow. No emergency organization dealing with so vast a problem as that of the labour market could be efficient; the growth of a single night, like Jonah's gourd, would perish in the heat of a war-time day.

(6) *Further Weak Links.*—In addition to the foregoing weak links in the chain of production, the failings of the State itself, or whatever Ministry is acting on its behalf, must be referred to. Items normally supplied by the Air Ministry include engines, machine guns, wireless sets, cameras, bomb racks, navigation lights, and other accessories; should any delay occur in the supply of such components, the aircraft maker cannot be held responsible for shortage in deliveries of complete aircraft. During the War delays were so frequent that it became necessary for the Service to take over aircraft completed as far as a particular manufacturer could carry them without further supplies. These aircraft were delivered to Aircraft Acceptance Parks, where the missing accessories were installed. The alternative is an accumulation of partly completed aircraft in the works of the makers; but that congests space, restricts future output, leaves the manufacturer out of pocket, and renders his workpeople dissatisfied.

EXPANSION.

The responsibility of the Royal Air Force extends to the provision of aircraft to meet four requirements:—

- (1) A sufficiently large peace establishment, and reserves;
- (2) An output from manufacturers adequate to meet war wastage on the outbreak of war;
- (3) A further output to expand the Service;
- (4) Wastage of expansion aircraft.

At the end of the late War the Service had an establishment of about 20,000 aircraft, and 3,000 new aircraft and 3,000 new engines were

being delivered monthly by the manufacturers. It should be possible to reach over half that output by the end of the second year of a future war; if enemy Powers aimed more rapidly, our situation would be disastrous.

Aircraft should be in action within a month of delivery, and further wastage output at 50 per cent. a month will be required. With maintenance and expansion orders to be filled at the same time existing aircraft works would have to expand about twenty-fold in one year—an utter impossibility. One alternative is, throughout the first two years of a war, to maintain a smaller Air Force than that of the enemy; another is to reduce in some way the ratio of expansion.

However well organized the industry, it cannot leap into war production at such short notice, and a period of about six months must elapse before factories can meet war wastage alone without supplying any aircraft for an expansion programme. If, then, the only source of war supply were the factories, war wastage would continue almost unchecked, rapidly reducing the strength of the Service. In two months there would be no first-line aircraft left. To meet this emergency there are the reserve stocks, and an entirely inadequate output from repair depots.

Assuming, again, a peace establishment of 500 aircraft, the reserve stock is simply calculated. It must suffice to meet the wastage demand until the industry and the repair depots begin to contribute their quota. Their share of wastage supply for some months will be infinitesimal, and a demand of 250 a month will fall on reserve stocks. If that demand is to be met for the first six months of war, the total stock would be 1,500 aircraft. During peace these aircraft will be used up much more slowly. The output of the manufacturers and repair depots can meet all peace-time demands, but calls upon the reserve might amount to 20 aeroplanes per month. Dividing this figure into the total reserve, it will be seen that aeroplanes under peace conditions would remain in store for as much as five years. There are obvious disadvantages in acquiring and storing such numbers of aircraft which may deteriorate or become obsolescent. But it is the only way to ensure continued supply in the opening months of war; and the disadvantages, if taken in time, can be overcome by suitable organization. The more complete the organization of industry for large-scale production immediately following an outbreak of war, the smaller the reserve that need be held.

REPAIRS.

Aircraft are normally repaired at repair depots—one in England, and several in commands abroad. Those abroad can only just deal

with the peace requirements of the commands, and would be of no immediate use in any European war. We must therefore consider how the Home Depot will stand the strain of war. The answer is, that it would be very little use when the emergency is greatest. Its output in peace is about a quarter of peace-time demands, because a proportion of repair work is sent to the contractors to enable them to keep skilled men employed. But on outbreak of war contractors would launch forth upon a greatly enlarged programme of new aircraft, and could not carry out any further repairs; the latter would then all be sent to the depot. That establishment, being organized for a small output, could not tackle a large one. Moreover, its peace-time personnel includes the Expeditionary Force Depot, and a large proportion of the skilled men and specialist officers would be transferred overseas immediately, their places being taken by less competent reservists. Even if all these difficulties were overcome, aircraft would still take three months or more to pass through a complete overhaul. That is to say, the output for the first four months could not rise above peace-time level.

For a peace establishment of 500 aircraft the peace output of a depot would be about 15 monthly. If war wastage were 250 aircraft a month, about 125 of these ought to be repaired by the Home Depot and the Expeditionary Force Depot. But the Home Depot would still be disorganized by an influx of reservists out of touch with the work; and the Expeditionary Force Depot could not give any output at all for two or three months after installation on foreign soil. Even then its output could be only about 15 monthly. It is assumed that aircraft will be flown to the front. If they have to be erected abroad, the repair output of an Expeditionary Force Depot would be *nil*.

What happens to the aircraft discarded by the Service as needing complete overhaul or a major repair during the earlier months of war? These aircraft, even in small wars, are delivered to the depot, where week by week they accumulate to form an enormous pool of derelicts. In small wars a proportion of them can be shipped home. But any aircraft shipped without a case becomes very much damaged in transit, and if these are to be cased the work takes a large number of skilled personnel away from repairing aircraft. The derelicts therefore deteriorate for six months, until resolution can be screwed up to scrap about £5,000,000 worth of equipment. No feasible remedy for this situation can be suggested.

On the outbreak of war, therefore, the two depots must expand sufficiently to repair 125 aeroplanes and engines monthly instead of 15; and if the Service expands to 2,000 first-line aircraft, depots must follow suit to deal with 500 aircraft monthly. This thirty-fold expansion

involves no housing difficulties, for enlisted men live in tents ; and no machinery hold-up need occur, since overhauls will be by replacement instead of repair.

In a major war replacement overhaul supersedes repair of components, owing to differing standards of economy. In peace, we save money ; in war, life and labour are more important. The economy of repair by replacement may be demonstrated as follows :—

- (a) Unserviceable engines or aircraft can be dismantled, the components reconditioned, and the aeroplanes reassembled ; or—
- (b) After the engines and aircraft have been dismantled, worn components may be scrapped and replaced by new ones drawn from store or sent out from home.

While the latter may sound a very expensive alternative, its economy depends upon the proportionate costs of labour and material in any particular component. Where the labour cost is high, reconditioning of that component at a depot close to the front will take up special machinery and a large number of Service man-hours ; whereas a component sent out from home consists of a small value of material—which is lost if the original component has been scrapped—and a labour cost which must necessarily be far less to the nation than that involved in using Service labour for reconditioning components abroad. The component produced in the maker's works would be one of thousands coming off a specially set up chain of machines ; the component reconditioned in the Service one of a very small number, laboriously repaired by hand operations on improvised machine tools. Whether or not components are repaired depends first of all upon this proportion ; but the decision may be influenced by war conditions, such as the necessity for limiting the quantity of material being sent out from the United Kingdom, transport times and urgency of demand, the possibility of deterioration of replacement parts held in store against demands, and the production situation in the manufacturer's works ; that is, his machines might not be set up to produce the particular component in quantities demanded by squadrons.

Replacement overhauls require large quantities of spares, and there must be a war reserve of spare parts, which will suffer from all the disadvantages of the reserve of complete aircraft. Manufacturers object to the provision of spares, possibly because a factory has to be specially balanced for an output of aircraft and spares, and is then suitable for an output in no other proportion ; whereas a factory is always in balance for any particular output of completed aircraft and engines. The proportion of spares likely to be demanded can be laid down in

peace, and should hold good for some time after the outbreak of war ; that proportion cannot be altered without dislocating the chain of production in the maker's works.

CONCLUSIONS.

This completes a survey of some problems which confront the Royal Air Force in particular, and other technical Services to a less extent. The remedies apply to all three Services, especially to the design and supply of tank engines and tanks.

The one solution to these problems is preparedness ; that will cost rather more money in peace, but it will result in a greatly reduced expenditure in war. Measures which should have been taken years before, and are eventually forced on us by an emergency, are costly in money and in lives.

A larger peace establishment of aircraft for Home Defence would have the following technical advantages :—

- (1) Factories in peace-time would be larger, more skilled men would be employed, and there would be more houses, machinery and materials in existence. The scale of expansion would be about tenfold instead of twenty-fold.
- (2) The intensity of air fighting would be reduced, and the percentage of wastage and casualties reduced also.
- (3) The incidence of high wastage may be delayed ; that is, an enemy would be less likely to bomb London ; but a Service half the size of his is a positive incitement to early bombing attack.

Aircraft factories must be organized by the Service to meet war wastage. The mere increase of the Service peace establishment is one aid to expansion ; civilian aviation, even though subsidized, is another ; the building up over a term of years of an adequate reserve is a third. All these combine to keep a larger number of skilled men employed, and to reduce the ratio between peace and war output. The Service should make every effort to ensure high production rates. Some of these steps will now be set out in chronological order.

The first step is a reduction in types. At the end of the War there were in use between twelve and twenty different types of aircraft and engines—a multiplicity which involved unnecessary confusion in reserves, stocks of spares, organization, and maintenance. It is therefore the duty of the Service to reduce the number of types of complex weapons to the very minimum consistent with its technical requirements ; and that reduction must be carried out some years in advance

of any probable war, in order that the organization following upon reduction may be complete.

When the types have been decided upon, they must be simplified to the uttermost degree consistent with efficiency. This means the use of commercial grades of material, the redesign of every component so that it can be produced in mass if necessary, and the elimination of every instrument or accessory unimportant when compared to the needs of quantity production.

The State must make a policy decision to have large numbers of aircraft rather than the very highest quality—that is, a decision for quantity rather than quality. Reduction in weight by a few ounces in an aero-engine, or even an increase of 2 miles an hour in the speed of an aircraft, are less essential than assurance of the largest possible output under mass production conditions. It is high time that minor but not essential improvements should be set aside in favour of the modification of aircraft to meet the large output which will be necessary in time of war. Amongst these improvements would be a reduction in the number of grinding operations, especially those devoted only to obtaining a high finish of components or to a reduction in weight amounting to a few ounces. That high finish is accomplished only by the use of machinery and skill which might be more efficiently employed.

If a war were to come within five years of any specified date the simplified types would be those with which the Service would have to be equipped; types must, therefore, be standardized, and all the war organization of the Service can then be based upon that foundation. About half-way through the five-year period modification and progress can perhaps be consolidated in new types, overlapping by 50 per cent. the live period of the old. On the outbreak of war the standardized types would be available in large numbers, since numbers are almost the only criterion at the beginning of an aircraft war; but the whole of the organization necessary to produce a type which is more up to date by two and a half years would be available.

When types are standardized the firms who will be responsible for their output must be informed and consulted in regard to alterations to be made in peace, so as to fit their organization for use in war. This will enable main contractors to arrange with the Government what proportion of the orders is to be sub-contracted. Reorganization for war purposes of main contractors' and sub-contractors' works involves a census of national resources in labour, housing, tools and materials. Only upon this census can allocation of these sources amongst the main and sub-contractors be carried out. This allocation can be tentatively made in time of peace, so that manufacturers are assured that all these

resources will be available to meet Service demands should the emergency arise.

There will always be components of aircraft which need not necessarily be manufactured in the works of the main contractors. The most efficient main contractor is the one who can dispose of the largest possible proportion of his output to reliable sub-contractors with works and machinery suitable for the manufacture of the components in question. The selection of sub-contractors, the inspection, and if necessary, slight reorganization of their works, are not duties which should be left to the very last moment; the organization of a large group of sub-contractors, often as many as fifty, should be completed well in advance of an outbreak of war.

All main and sub-contractors could hold, at Air Ministry cost, the drawings of the engines, aircraft or components they will manufacture if war breaks out; in addition, jigs, small tools and gauges must be planned and available in sufficient quantities for the output required many months before a state of war is declared. Once again it is necessary to plan not merely months, but often years before the emergency arises; this means that if an aircraft type changes, the drawings and other material are admittedly obsolete. But if peace were to last for as long as fifteen years, the small cost of replacement of all those plans and other key material about once per five years would be but the smallest proportion of the money saved by such an insurance premium.

In any major war, organization of Acceptance Parks might again be necessary; they would not be required to meet a war output for several months after the outbreak of war; but unless arrangements are made during peaceful years there will be no engineer officers and no skilled airmen to staff them. Many of the aircraft sheds used in the late War are still in existence. The fifteen parks delivered 3,000 aircraft monthly, and held many thousands in store as war reserves.

Reserves must be organized and built up, including stocks of spares. There will be constant employment for skilled men in keeping reserve stocks modified and in good condition. These men can be transferred to repair work when reserves turn over so quickly that maintenance becomes unnecessary.

Repair depots should be larger, in relation to the size of the Service. They could then repair larger numbers of aircraft. Contractors would be compensated by increased orders for new aircraft, for civil aircraft, and for the building up of a reserve. Depots should then provide experience and training for a greatly increased number of trained airmen, to be available as a nucleus for a great expansion. The maintenance personnel should also be skilled, so that they could be transferred

to depots in war and replaced by dilution personnel. Organization should provide a large pool of skilled N.C.Os.

The duties of engineer officers in war, and the numbers required, should be decided. The organization by which staffs and depots are to be expanded is no product of an idle hour; it will take over a year's work to perfect. The alternative is to assume that there will be no expansion of staffs and depots, and to trust to "muddling through" when war arrives.

Finally, none of this work can be planned and carried out without vision, forethought, foresight, or whatever virtue it is that takes thought for the morrow; or without enthusiasm, driving force, and energy to get things done. Planning and action—both are necessary.

Industry has its planning departments: they consider not only what emergencies may arise, but how they are to be met, and plan accordingly. Unless technical Services do likewise, unless we prepare as other great Powers are preparing, the new warfare will defeat us. Then, if the Empire falls, our only consolation will be that we saved money during peace.

DISCUSSION.

REAR-ADMIRAL C. E. KENNEDY-PURVIS pointed out, with reference to the figures of losses during the late War, that aircraft material had been manufactured throughout that period under great stress. Could one say, therefore, that the losses would be the same in any future war, when aircraft engines and air frames generally would be much more reliable, and taking into account the fact that the Service since the War had been improving its design and maintenance technique? Losses in war were either due to machines shot down or machines so damaged that they had to be "written off," but machines which were not shot down should remain in a good state of efficiency. He took it that the severe losses due to ordinary wear and tear which had occurred in the late War would not occur again; so perhaps the figures given for losses were rather high.

Then another point: one went round an aircraft manufacturer's works and saw beautiful and intricate machine-tools, etc.; but obviously these were working at about 10 per cent. of their full capacity. Could the Lecturer give a figure to which the manufacturers could expand in, say, a fortnight? Could they increase their output from ten aircraft a week to forty or fifty, given the necessary increase in unskilled labour for machine minding?

CAPTAIN E. ALTHAM, R.N., asked whether, in view of their improved capability to withstand weather, aircraft can be left out in the open to a greater extent now than was the case in the late war. If so, this would seem to have an appreciable bearing on the cost of upkeep, while it would enable expensive and cumbersome hangars to be dispensed with to a great extent, thereby facilitating the mobility of air bases.

MR. A. CLINTON, of the Bristol Aeroplane Company: It is interesting to see that the Lecturer has emphasized the importance of evolution towards a state of industrial preparedness, rather than industrial revolution in case of an emergency

If we can get a better understanding of each other's job, we should make some progress. Among the many interesting points raised I should like to refer to two or three.

Output.—In estimating what is required, I do not think that one can be too optimistic in deciding the number of engines or machines required, as, apart from emergency demands from the Service, one has to consider what the worker can produce, and the capacity of the man affects output.

Shifts.—Three 8-hour shifts do not necessarily give a threefold increase in output for an 8-hour day. Output varies with class of work; generally any night-work is not so productive as day work. By putting on a night shift one gets about $1\frac{1}{2}$ times the output, and not twice, and by working three 8-hour shifts the output is more like $2\frac{1}{2}$ than three times what it is with one shift.

Morale of Workers.—Enemy propaganda prior to any war, and during its early and difficult stages, will undermine a proportion of the workers, reducing their effectiveness. In the endeavour to secure superiority in the early stages of a war, attacks will probably be made on our factories, and such attacks, or the anticipation of such attacks, more especially by night, will have a bad effect on output.

Essential Material and Accessories.—At the outbreak of a war we are likely to find ourselves in need of some essential material or accessory which we normally get from our opponent. This is where the assistance of neutrals must be sought until we have settled down to war production. I mention this because it emphasizes how important it is to know what you want beforehand.

Simplification.—Everyone strives for simplification of design, but it happens that in the progress of design scientists invent accessories that tend to complicate a straightforward production scheme such as we have under discussion this afternoon. It is difficult to know where to call a halt in producing a new engine, because, in a short time, the useful accessory becomes a necessity. It is suggested that for the purpose of an emergency 75 per cent. of production should be equipment not perhaps of the very latest in design, and 25 per cent. should be of the very latest, to be held in readiness for surprise purposes, which is essential at certain stages in endeavouring to keep or regain superiority over an enemy. Every endeavour would, of course, be made to increase the output of the latest design, which would be held in readiness, and probably not used indiscriminately until there were sufficient numbers available.

Regarding the use of special material, the aero-engine designer is constantly urging the metallurgist to produce alloys that will be better able to withstand the stresses of a high-duty engine, but it must be remembered that the special materials of to-day become the standard materials of to-morrow. Generally the material manufacturers can supply the metal when the demand exists. It has been said that the side that can re-equip itself most quickly will gain the advantage, although it may not necessarily have the latest designs in material.

The product of my company, the single-row radial air-cooled engine, is a suitable unit for quick output in case of emergency, and can easily be manufactured by sub-contract.

We have had experience of such sub-contracting, and in connection with our foreign licence drawing office we have accumulated valuable experience in the matter of transferring our design to other works for manufacture. When the licensee has the will to work, it is surprising how quickly he can reach a first-class rate of production.

The extensive use of forgings in the engine is one of the important features, giving economy in manufacture and reducing scrap material as compared with

castings. The prevention of scrap material is most important in war. The technique for forging has now advanced to the stage when parts may be produced closely to the finished dimensions, thus reducing the amount of machining time required. In order to produce the numbers of forgings required for a large production, probably more forging plants would be necessary than are thought to be in existence at present.

Standardization.—In carrying out Wing Commander Williamson's suggestions it is assumed that some kind of Emergency Planning Committee would be formed, comprising members of the Service and of the industry, and that they would have a clear idea of what was wanted, and would have a plan which would co-ordinate schemes for expansion, planning, arranging the supply of jigs, tools, gauges and so on, to meet the emergency.

In conclusion, it appears that an industry well organized for peace can be most easily expanded in case of emergency, and if the principles enumerated in Wing Commander Williamson's lecture are followed out they will lead to quick commercial recovery afterwards, and such a recovery is of vital importance, whatever may be the issue of a war.

MR. H. D. TROUGHTON remarked that it appeared that the acceptance parks mentioned by the Lecturer had been necessary because of the breakdown of supplies by the State. Would it not be more efficient to arrange an organization whereby cameras and such easily manufactured things could be produced on a commercial scale rather than having to have recourse to these parks?

THE LECTURER'S REPLY.

THE LECTURER: In regard to our losses in a future war, formation fighting and night landings might result in a rate of loss greater than that in 1914-18, despite the increasing efficiency of engines and increasing skill of pilots. As the Chairman possesses specialized experience of the rate of wastage in war, he may perhaps deal with that part of the question.

During peace machine tools are worked during an 8-hour day, but could be worked 24 hours if three shifts of labour are available. I do not think, as a matter of opinion, that any maker will be able to obtain labour for three shifts, or even for two. Even if that were possible, there remains the problems of supervision for the second and third shifts, and working up an inspection department more than twice the size of the peace organization. The Royal Air Force will have to meet the same problem—that of the expansion of its inspection establishment to a war-time scale at a time when everybody else wants skilled men for extra shifts, increased supervision, and wider inspection. I might add that war-time labour demands close supervision and more careful inspection; we shall not be able to dilute these staffs.

With regard to Captain Altham's question about durability, there has certainly been a great improvement in the durability and in the repairability of both aircraft and engines in recent years; and in our Air Defence Exercises it is the usual thing for both bombers and fighters to "sleep out" whenever they are located at an aerodrome other than their own. In time of war a similar procedure would undoubtedly be necessary, as there is no place abroad where we would find sufficient hangars or sheds ready made. If an aerodrome is to remain in one position for a long time in war-time, we could use portable hangars; but their production would increase the difficulties of tent manufacturers, who would already be working full time on other types of tents.

I am not optimistic about the State being able, in another war, to obtain high-

grade materials at short notice and in large quantities, even when such materials have passed beyond the experimental stage.

In the late War supply troubles developed with alloy steels and with aluminium ; there was not enough aluminium even to make carburettors. It became necessary to alter engine designs so that such metals were no longer used for certain components for which, until then, they had been considered essential. Again, magnetos had been made in Germany, and we had to initiate their manufacture in this country. The factories then started by the Admiralty, War Office and Ministry of Munitions are now available for our needs in a future war. But it does not follow that we shall have made similar preparations for every type of material and for every type of component. For example, some types of aeroplane are made of tubes. There are not very many tube manufacturers in the country, and we might find difficulty in obtaining a continued war supply of tubes unless those factories were expanded, an extension which might take several months to carry out.

Acceptance parks were necessary, as one speaker stated, because the State's supply organization broke down. The State undertook the business of supply of certain special components and materials because there were insufficient sources to meet war requirements. Aero-engines were the greatest difficulty. At that time a large number of firms without previous experience had begun to manufacture airframes. It was impossible to produce aero-engines at the same rate as airframes, and therefore some centralized authority had to allot the engines at its own discretion as they became available. We had therefore to take the airframes off the makers' hands and store them in parks until the engines were ready ; and then the Service had to install the engines. The alternative of returning aircraft to the makers for the purpose of engine installation was impracticable. I cannot see that we shall ever be able to dispense, in a major war, with the aircraft acceptance park organization.

THE CHAIRMAN :

A question has been asked about the rate of aircraft wastage. During the eight months March to October, 1918, exclusive, a total of 6,500 aeroplanes was struck off charge of the squadrons in France. Of these the number struck off as being time-expired was 6 per cent. ; the number struck off on account of enemy action or as missing was 36 per cent. ; errors of pilots, 24 per cent. ; wrecked from forced landings due to engine failure and similar causes, 29 per cent.—the balance being put down to the effect of bad aerodromes. The wastage due to errors of pilots might be reduced in a future war, at any rate at the beginning. The wastage on account of engine failure and similar causes will be reduced owing to better engines, but it will not disappear altogether because many of these failures were indirectly due to the presence of an enemy—for instance, running at unduly high revolutions. So it is unlikely that the rate of wastage will be less than in the late war.

There are three points to which I would like to refer. In the first I differ a little from what the Lecturer said. He seemed inclined to attach too much importance to production as opposed to performance. I believe—at any rate in the case of the fighter—that performance, or rather fighting qualities, will always be the most important feature. One constantly saw in the last War how a few squadrons of a new and improved type of fighter were able to dominate a larger number equipped with an older and less efficient type of aeroplane. So I think there will always be a demand for the very latest type of fighter, even if it should mean smaller numbers. This assumes of course that the latest type is an improvement on the previous one.

This brings up the difficulty of deciding upon the type to adopt for production in time of peace. That is felt even as regards selecting an experimental machine to adopt for Service trials, quite apart from big production. You fix a date—say 1st May—to try out three types of experimental machines against one another. On the 1st June another maker produces something better because he has been able to wait an extra month to get an improved engine. Are the Air Ministry to say, "No, you are too late; we wash you out altogether," or to say, "This is a better machine and we must wash out the other three"? It is an awkward problem. On the one side it is ridiculous to be so hide-bound with red tape that the Air Force cannot have the best machine merely because a designer was a month late. On the other hand, if the opposite idea were carried too far we would never go into production at all.

The second point is that these technical problems are not merely the affair of a technical staff. They are just as important for the operational staff as well. The Lecturer's reference to ball-bearings reminded me that some time in 1917 the R.F.C. H.Q. in France were working out the number of squadrons we ought to have for the next operation. We were looking ahead somewhere about six months. I worked out whatever the number was—say 20 squadrons—of a particular class of fighter. Two or three days later I was told from England that a ship coming from Sweden conveying, not ball-bearings, but a special type of steel required to make them, had been sunk, and I then had to state definitely that we could not maintain these 20 squadrons in the field, but would have to cut the number down. It was not a question of shortage of actual engines, but one of maintenance; we would not have been able to get the spare parts necessary to keep all 20 squadrons going. So, unless the operational staff are in touch with the whole technical problem, they are apt to be out in their calculations.

The third point is the immense importance of all departments in the Air Service keeping in touch with world progress. The Lecturer mentioned Napoleon. One of the reasons why Napoleon was able to conquer most of Europe was because he realized years before his enemies the difference made to military operations by the fact that roads had developed and that agricultural production had increased, and how this made it easier to move troops and to live on the country. To-day we have to deal with more abstruse matters. It is easy to foresee that a firm that makes wooden furniture will not be able to produce metal aircraft during the next war, but, as the Lecturer said, the problem goes a great deal deeper than that. We have to keep in touch with all these developments in technical production, and not conclude that because a firm makes engines for motor-cars that they will necessarily be able to turn on to the production of aeroplane engines in time of war.

The customary votes of thanks to the Lecturer and to the Chairman were then carried by acclamation.

THE SECURITY OF SUPPLY

By CAPTAIN H. J. COOPER, R.A.S.C.

SCANT attention has been paid in military literature to the problem of the security of the roads in the forward area. The despatches of commanders have usually contained little of value for the guidance of their successors. Nor is this actually a subject for wonder, for the prosaic details of the guarding of baggage and the convoying of supplies lend no lustre to the report of a brilliant action. It is rather in the private correspondence of commanders and in memoirs, diaries, "papers" and letters of their times that reference to the hindrances of supply are to be found.

Not least among these hindrances were the results of enemy action, this action being manifest chiefly in the form of ambush and raiding cavalry. Accordingly, in any endeavour to apply correctly the experience of the past, it is necessary to guard against argument based too logically upon analogy, although both soldiers and statesmen have in many instances had historical analogy as their sole guide. Whilst in many things the past is a mirror of the future, the portrait is often faithless concerning size and speed. It is now stated that the distance between railhead and delivery point may vary from over 80 miles to less than 50 miles, according to circumstances.¹ This may appear to be extremely loose phrasing, so that some commentary is needed; more especially is this the case as military training has no longer a single and undivided objective. In fact, British military activity has been defined as that required to support four classes of expeditions:—

- (1) Imperial policing.
- (2) Minor expeditions—those capable of acting on peace establishments.
- (3) Major expeditions—for which the Territorial Army may be embodied.
- (4) National war.²

¹ F.S.R., Vol. I, Sec. 104 (2).

² Training Regulations, Ch. I, Sec. 2.

The military greater does not necessarily include the military less. This is no paradox idly put forward as a glib counter to historical testimony. When some fourteen or fifteen years ago deductions from the World War were beginning to crystallize, the suggestion that the British Army had more than one problem was contemptuously vetoed. Was it not certain, it was urged, that if there had been forthcoming in 1775 leaders and soldiers of the calibre of Marlborough and his victorious armies, then all the levies of Virginia would have been scattered as chaff and the American colonies would have been cemented to Britain? Again, had Wellington and his Peninsular Army been landed in the Crimea, where would they have stopped? After 1918 the claims of the single objective school were almost Cæsarean. Was not the finest army, unrivalled in experience of every kind of warfare at the moment, possessed by England? Virginia and the Crimea could never be repeated. Yet the methods of Flanders—the greater—were not successful in Waziristan—the less. Not only are the methods, but in many ways the training, which will serve successfully to prosecute continental war inadequate for the reduction of recalcitrant nomads. And further, the administrative arrangements required for operations against an enemy on terrain capable of accommodating a major expedition are manifestly unsuited to those required to sustain a force operating with an attenuated line of communication in broken country against an enemy incapable of organized resistance. During the opening years of the second decade of this century it was plain that the British Army was being trained for war with an army of continental proportions in the temperate zone. There is no such simplicity of present military aims.

The object of military training is to prepare the Army for war.¹ An administrative translation of this phrase may conveniently be given as the procuring and producing at times and places conforming to the commanders' needs of all the requirements of troops. As there may be four classes of expeditions, so will the administrative training and technique require to be fourfold—each part possessing distinctive features. Thus, if during the training season the operation of forces in open country, such as Salisbury Plain, are studied it will be unwise to apply too rigidly the lessons so learnt to a campaign in motor-proof country conducted by a few brigade columns, because the requirements, say, of the Burma Police or the Zhob Militia are of a different order to those of the British Army in the Low Countries.

A brief study of the lines of communication which will serve the three former classes of expedition is not without profit: the case of national war will not be explored, since it would require a work of

¹ Training Regulations, para. 1.

monumental proportions to give an outline of the measures necessary to turn the country into an arsenal. In the past it is true, there have been occasions in which commanders have cut loose from their communications, but to-day their dependence upon these lines tends to increase and excursions will but rarely be possible.

The case of Imperial Policing.—In the remoter parts of the Empire, in which any military forces are dispersed in garrisons and detached posts, lines of communication usually consist of roads and tracks—*pistes indigènes*—and occasionally ropeways. Convoys do not run daily and their security is dependent upon a variety of factors. Tribal responsibility during peace is chief among them, but military surveillance is not wholly absent; ambush and pilfering are the chief problems which confront a commander. The degree of protection required depends always on the state of the country. Should there be an insurrection, then it may require a minor or a major campaign for its suppression, and ultimately for the extension of the area to be policed. During hostilities all movement would be protected movement, the chief routes being permanently picketed. As the country settles and the population becomes accustomed to the presence of military or militia garrisons, protective measures lapse from regularity; they are undertaken as part of collective training. In these circumstances the individual and collective training seasons run concurrently and extend over the whole year. Tribal responsibility is instituted during this period, and levies receive the support of troops training in the vicinity of their posts: it is at this time that there is the greatest danger. But when tribal responsibility has been established and may be enforced, stratagem and treason are less likely to be directed solely against the soldier.

Many units and formations as visualized in present war establishments could not operate as such, and much of the mechanized and mechanical impedimenta of the store tables might be a handicap.

The case of a Minor Expedition.—Minor expeditions, it may be assumed, will be directed against an enemy of small coherence, rudely organized, poorly found and of no industrial importance, though he might not be without the support of interested neighbours. Their objects are often diverse, but usually include the institution or extension of some form of policing: they are seldom simply punitive. History shows that they rarely maintain their character of minority: they often expand and then assume the complexion of a major campaign.

The class of enemy against whom such an expedition may be directed would be analogous to that encountered in the Maori, Abyssinian and

West African campaigns. Greater coherence will be found among them than among democratic nomads, though their armament and equipment may be poor: individually their standard of fire and movement may be high, but the concerted action necessary for the use of automatic weapons may be absent. Unless assisted by outside sympathizers the menace from the air will be negligible, and at the outset they may not be served by artillery.

Whilst it would be unreasonable to suppose that the security of the lines of communication of a minor expedition would be menaced in the first instance by mechanized elements, these might be acquired during the course of the campaign. Owing to their value it may be doubted if the enemy would risk their disablement or annihilation in attacks on depôts or columns: he might prefer to retain them for what he would consider the decisive attack.

The case of a Major Expedition.—The Crimean, South African and "1914" ventures were major expeditions. In each instance they led to what at the time was considered to be national war: but an enemy in the future may generally be no less well organized and as well armed as the British Army; he may also be similarly equipped. In morale collectively he may be equal, though individually he might be inferior.

The political alliances of such an enemy will not leave him without powerful neighbours whose moral support and material resources may be of great assistance to him at the outset, or may violently deflect the course of the campaign after battle has been joined. The rearward units and installations of a force operating against such an enemy might not be immune from attack from the ground; almost certainly not from the air. The security of the lines of communication in the event of national war would depend on similar factors to those which operate in a major expedition, for the immediately available force is a major expedition. It would be vain to speculate at this stage as to the ultimate form of protection which third and second-line transport would require, should the expedition develop into a contest between first-class Powers. It is evident that the frequency and intensity of chemically assisted aerial and land attacks are important factors. Suffice it to say that supply unit commanders could neither prevent nor repel attacks by a mechanized enemy. They carry and haul and are responsible that their loads are not pilfered: in no category of military activity which has been examined could they successfully resist a concerted attack with their existing armament; neither could they successfully carry out their functions were they made responsible for the defence of their columns from hostile raids.

"Every commander is at all times responsible for the protection of

his command and for concealing his strength and dispositions from the enemy." ¹ To apply this maxim in its entirety to the commander of a divisional baggage company would be a serious error—firstly because the protection of such a unit is the responsibility of the force commander,² and secondly because the armament of the unit only consists of 375 rifles and 2 automatics; moreover, these are dispersed over 3 miles when the unit is moving, and over 16 acres should it be concentrated and at rest—that is under normal working conditions.

"Armoured cars and mechanized artillery form an efficient and economical escort. Infantry must be carried in mechanical transport. Side roads and approaches will be blocked if possible." ³ Are these measures adequate?

THE ENFORCEMENT OF SECURITY.

Imperial Policing.—On the Indian frontiers, in the mandated territories, at Aden, and the smaller overseas stations there is such a diversity of country that a single rudimentary and empirical method of protection could not be made suitable for all situations. On the North-East and North-West Frontiers of India armoured cars and mechanized artillery could not always operate, whereas on the plains of the mandated territories that armament would be more than equal to any raid by the indigenous population. All stores and supplies would either have to pass up a protected corridor, or the hazard of occasional interferences accepted. Armoured cars and mechanized artillery are not a complete answer to raiding tribesmen who rarely afford targets to riflemen, nor yet to the stratagem and treason by which posts occasionally fall.

Minor and Major Expeditions.—Raids by enemy infantry and cavalry would not be a menace to the lines of communication of a modern force, though sudden risings, causing the annihilation of a weakly or inadequately manned garrison and the destruction of convoys, may never be wholly prevented. Nor will it always be easy to place accurately the incidence of punishment, as the power of dispersion and disguise is greater than that of secret assembly. It can happen that an intrepid commander may, by his model orders, prompt dispositions to combat all ruse and attack, and by unceasing watchfulness in camp, so impress the enemy that they will concentrate on harassing the transport and rearguard to such effect that, whilst only spasmodic resistance may be offered to the passage of his force, he may find the greatest

¹ F.S.R., Vol. II, Ch. VI, Sec. 36 (3).

² F.S.R., Vol. II, Ch. VI, Sec. 56 (1).

³ F.S.R., Vol. II, Ch. VI, Sec. 56 (5).

resistance to his efforts to maintain its supply. Thus will his rate of movement be slowed down and become dependent on the rate of movement of his convoys. He will be compelled to make detachments for the protection of his lines of communication or wait for them to be assured by other troops. Motorized infantry, armoured cars, tanks and mechanized artillery would form the elements of an almost irresistible force. Operating in its own territory it could successfully deal with enemy raids: in occupied enemy territory, however, it would require to be assisted by a very powerful civil administration, since it is unusually vulnerable to sabotage.

A major expedition, before the close of a campaign, may be confronted by an armament equal to its own. It is then that ruse, stratagem, treason and ambush may be reinforced by raiding in force by mechanized formations. But to such a pitch can deception be pushed that self-deception—its worst form—may result.

Whilst it would be absurd to attempt to determine every variant which has bearing on the question, it must be remembered that to raid and destroy enemy installations in enemy country eighty miles away, or even circumvent all fighting formations and attack in the region of the headquarters of supply companies, is one of the most hazardous missions upon which any commander can order his troops. For it is plain that to penetrate so deeply into a highly organized country, with its systems of telephones and telegraphs undamaged, and to carry out its task would be a notable achievement: to return might never be possible. Were the country similar to the Yorkshire Wolds, Salisbury Plain or the Baghdad plain, then attempts to elude all pursuers would very probably be crowned with success. But in the Garth or Blackmore Vale country, or the cockpit of Europe, with a hostile population at their heels and a determined civil administration willing to effect any demolition to impede the raiders, they would be dispersed and ultimately neutralized.

It remains now to visualize the methods by which raiding may be prevented or its effect diminished. Formerly raiding was possible in two dimensions only; thus if a corridor after the manner of frontier campaigns could be kept clear of the enemy, then movement was free during road-open hours. To-day raiding with precision can be carried on in three dimensions, and to ensure immunity from damage a *tunnel* must be created in which traffic may move. Where roads leading to the front are far apart then a series of narrow tunnels will suffice, wide enough to prevent automatic weapons from being brought to bear from either flank, and high enough to prevent accurate bombing.

The application of science to war has devised many aids for the

assistance of the fighting arms—the advanced methods of signalling, aeroplanes, cross-country vehicles, preserved foods and gas are some of the more important. Whether with fuller experience all the aids may be incorporated in cavalry, infantry and artillery unit it is yet idle to speculate; it is now necessary to segregate some in units for which a special technique has been evolved. For the effective protection of the transport units moving in rear of the fighting formations a divisional pioneer battalion may be a valuable adjunct from which sections may be rapidly detached for special missions, and which are able to supply permanent detachments to units which may require them. The chief tasks of such a unit would be the erection and removal of obstacles, natural, mechanical and chemical, and the making of alternative routes round obstacles. And this suggestion is not made without much thought and some experience. It is not long since the last pioneer units were disbanded—those of the Indian Army; it may seem that it is provocatively presumptuous to suggest their reinstatement. The tasks which have been assigned to such a unit cannot adequately be performed by any existing unit. Engineer field companies cannot be dispersed in such a manner as to make a proportion of their personnel available for these tasks, neither is it possible for the personnel of transport units to undertake the temporary isolation of an area they occupy. Nor does it seem economical to detach infantry working parties to carry out this work, if only because their training and equipment are inadequate. If a commander is successfully to engage, defeat and pursue an enemy with a modern armament he must be assured that his attenuated lines of supply are adequately protected. He cannot afford to be preoccupied by his communications.

THE FUTURE OF INDIA'S DEFENCE

By LIEUT.-COLONEL A. BAIRD SMITH, D.S.O. (Retired).

WHETHER the terms "self-government" and "independence," applied to India, be considered as synonymous, or the first as a form of probation for the second, the position of India, as regards its military defence, will not be made stronger by the application of these political labels, nor will that defence become any less important to the interests of the British Empire, of India itself, and of the world at large. The integrity of India's frontiers, the security of its economic life, and the stability of whatever government it may possess, must remain for many years to come one of the heaviest of Imperial responsibilities.

So far, the weight of this particular responsibility has been borne by Great Britain without question; and few Indian reformers in their pursuit of Swaraj have contemplated a state of affairs in which the guarantee of such support would no longer be forthcoming. In every scheme for Indian self-government, whether inside or outside the Empire, a kind of inviolable military *enceinte* is assumed as a permanent feature of the new State; a roof, as it were, to a complete house. This girdle of defence is, however, a thing of yesterday, of British fashioning, and not an inheritance of Indian achievement. In the interminable discussion of new constitutions, delegation or centralization of authority, fiscal autonomy, and popular enfranchisement, hardly any thought has been given to this artificial, borrowed security, which still laps the sub-continent in deceitful calm. At least, while still within the Empire, self-governing India will have to contribute no less than now to its own defence; and contrive that its contribution be not mortgaged to the needs of internal order, or diverted by conflicting sympathies in racial or religious strife.

In India, containing all the ingredients of a huge political powder-magazine, and abundant elements of discontent capable of igniting it, the alien British upholders of civil and military order have come to be regarded by the law-abiding majority as necessary, permanent, impartial, and on the whole beneficent. The situation of the military guardians, dispersed in garrisons about the Peninsula, faulty as it

may appear to the strategist, is at least supported by the good will of the bulk of the inhabitants. How quickly a like, seemingly secure situation could become one of extreme danger, when ill-will replaced good, was seen in 1857; a military mutiny, reinforced by disaffected and criminal elements, threatened to develop into a great national rebellion.

There are, of course, many weighty reasons that make the retention of India within the Empire a matter of the highest strategic importance. The control of Indian seas by the British Navy based on Indian ports, the security of communications with the Far East, India's contributions of material and military assistance in oversea theatres of war, these and other advantages must be weighed against the risk of unfriendly influence or hostile action by an independent India, occupying the position of an acknowledged neutral. As security for the preservation of the Imperial link, the mere presence of 50,000 to 60,000 British troops inside India can in no way be reckoned sufficient, even if their present position were to be transformed into one strategically free and secure. Such a position must ensure the capacity to deal at once with any probable emergency, without assistance, even though an Indianized Indian Army could be expected to afford it.

Whether, at some future date, India will be able to maintain its position within the Empire by means of its own forces alone is a question at present impossible to answer; the date seems extremely remote. It is possible, however, to estimate the military situation if a complete delegation of central authority in India had been effected and a British army of occupation were actually, if not theoretically, supporting with its bayonets a purely Indian government. This British army would be in a somewhat anomalous situation. There would still be two armies in India; but the other, native one, would have undergone a subtle change. It would no longer be an Imperial, British-officered, regular Army, but an Indianized local defence force, whose allegiance would be in fact changed, and whose overlord would be the Indian Raj. Thus it might be affected by politics or become a focus of communal intrigues and being no longer at the free disposal of the Imperial government, it could not be reckoned as ready to co-operate in all circumstances. Further, its relationship with the British Army, hitherto one of esteem and comradeship, would have grown weaker and weaker by the loss of its British officers—without whom it has never achieved very much. The common doctrine and traditions which it used to share would now be forgotten; and though, when completely Indianized, it might still be patriotic, efficient and reliable in action, it would unquestionably have lost quality as an ally. Where its sympathies, unfathomable and unpredictable by British minds, would eventually lie, it is idle to

speculate ; though in the scheme of Indian defence there should be as few unknown quantities as possible.

Rubbing shoulders with an Indianized army, three times its numerical strength, sharing its cantonments, establishments and services, the position of the small British army of occupation, in an India no longer under British administration or control, would, militarily, be thoroughly unsound. Disregarding political expediency, elementary precaution would demand its disposition as if it were alone in occupation of a foreign country the benevolence of whose inhabitants, however desirable or apparent, must never be taken for granted. Even if segregated and cantoned with sole regard to strategic requirements, the British army, unless greatly increased beyond its present strength, could be considered by no competent soldier itself complete provision for all contingencies. The latter must include a major invasion by a foreign Power—probably from the North-West ; one or more simultaneous frontier risings ; a rebellion of the Moplah type ; a communal upheaval exceeding the powers of an Indianized police ; or hostilities between two or more Indian States. Any one of these calamities must be reckoned in a water-tight defence scheme as possibly occurring with very little warning, and perhaps in conjunction with several of the others.

Whenever internal disturbances in self-governing India outgrow the capacity of the police, naturally, the Indian authority must be expected to use Indian troops. Yet these, if completely Indianized, would be an uncertain weapon in the armoury of law and order ; they might well refuse to perform the invidious and derogatory task of suppressing mobs of their co-religionists. But to expect the British army of occupation to undertake this responsibility alone, would be impossible ; even its occasional use must conflict not only with the communal and caste sympathies of the disturbed population, but with those of the Sepoys themselves. The same applies to the sympathies of the Indianized police which to-day, under the command and example of their British officers, they have learned to subordinate to their duty. The alternatives are clear ; either the Indianization of both army and police must be partial or exceedingly slow, or the British army of occupation must grow to a size fit to cope with all these adverse and difficult conditions.

How should the army of occupation be distributed ? Effective control of its communications, disposal of all its necessary supplies, and administration of its arsenals and depôts, in a country theoretically friendly but actually of uncertain temper, must in war either be enforced by martial law, or be at least assured by Services permanently staffed by a personnel known to be trustworthy under all conditions. The

Services of Police, Posts, Telegraphs, Wireless, Railways, Canals, Public Works, etc., under present British management and direction, can be expected to work in all ordinary circumstances of external war or in any extraordinary civil disturbances. Were these Services so transformed by Indianization that their staffs became divorced from all connection with the British military command, owed it no duty of co-operation, and could not be forced to give it, the situation of a British army diffused as at present over India, would be highly insecure ; though this might not be apparent till a great crisis occurred.

On the outbreak of war, the British commander would have to take necessary measures to secure his communications, especially if, as at present, they stretched from one side of India to the other. Should the various services necessary to that security be partly, perhaps wholly, beyond his control, and unreliable for continued co-operation, he would be forced to adopt special precautions with such means as were at his disposal. The guarding of the main lines of the Indian railways could not, of course, be undertaken by the British army single-handed, for it would thus be totally absorbed and parcelled out in long chains of isolated posts resembling, but far exceeding, the blockhouse system of the last South African War. As a field army it would dwindle to nothing, and be unable to share in an active campaign. In fact, the defence of the Frontier by a British field army dependent on bases within India is not possible unless the Indianized Indian Army, and the Indianized services, are counted as dependable, disposable, and capable of co-operation. If such an assumption, for any reason, could not be made, the special precautions which a British commander might then be driven to take would be preliminary to his disengaging his army from a dangerous situation by withdrawing it from India altogether. Thus the military, apart from the constitutional, safeguard afforded by the army of occupation is not absolute, but only relative.

Even were the Indianized Indian Army to be regarded as a dependable part of the field army, this would not mean that the co-operation of all Indianized services would be at its present level of efficiency. There might be a variety of causes predisposing Indians to refuse assistance to their own Government in waging war, especially internal war involving religious, civil, or communal animosities. The loyal working of the services might then become problematical ; obstructions, strikes, and sabotage might entail the employment of more and more troops on the communications, to the detriment or complete breakdown of the field operations.

The defence of the actual Frontier has to be considered along with the chronic malady of Border unrest ; that periodic effervescence of the tribes which, as in 1919, has so often necessitated large punitive

expeditions, and the occupation of various posts across the administrative frontier. Independent India might elect to deal with this question by some method of its own, but probably in the end would have to choose between two alternatives: between a forward policy of conquest and occupation up to the Durand Line, or one of peaceful penetration, by means of concessions for road or railroad development, and the encouragement of trade—a policy in which the Imperial Government has achieved remarkable success. Failure in either method would mean a return to the old system of Frontier defence by posts and garrisons specially formed for the purpose, and by meeting raids by counter-raids and reprisals. Any weakness of Indianized frontier administration, in contact with a well-armed No-Man's Land, would produce complications in the field army's peace distribution, and its mobilization and concentration for war.

The ideal would be to complete a forward policy till the administrative and military frontiers everywhere coincided. This desirable result would greatly benefit the internal tranquility of self-governing India; but it could never be achieved so long as parcels of British troops had to be scattered about the Peninsula as buttresses to a shaky civil authority or as safeguards to the lives and property of British and other minorities. These troops would need to be concentrated in their natural strategic position behind the true military frontier with the all important question of their communications and bases decided by this new situation. The shorter the former and the nearer the latter, the better.

For many years to come the question of controlling the tribes or of penetrating further into their territory must complicate the scheme for resisting an invasion by some great power; a danger that has been almost forgotten since the collapse of Tsarist Russia. The responsibility for making the necessary provision to carry out this scheme cannot remain divided between the Imperial and the Indian authority; sometime during its progress towards self-government the latter must definitely assume it, trusting to its Indianized army and Services to do their part. The commander of the British forces, lent to self-governing India for its defence, may possibly have reason not to share this confidence; he must then be prepared for the worst.

The localities in which the British Army would properly be quartered for purposes of this scheme, in peace-time, would be in Baluchistan and the North-West Frontier Province; and its obvious line of communication would be along the Indus valley to a base at Karachi. Assuming, at some distant date, that the whole tribal territory was under orderly civil administration, suitable sites for standing camps could be procured therein; while the deteriorating process of shutting up British soldiers

in hot and unwholesome down-country cantonments would come to an end. Trained as a whole, quickly mobilizable, the British Army would also be available, if the danger point was elsewhere, as an Expeditionary Force outside India. The risk of quartering troops in peace too near the actual frontier would be minimized by the physical nature of the country; the Landi Kotal position, for example, could be defended by a small force, and be almost impregnable to a *coup de main*. But this distribution would still involve, for the British troops in the North-West Frontier Province, a line of communication to Karachi some 800 miles long, and in places parallel to, and not far distant from, the Frontier itself. And though the main line of railway is covered by the Indus, its safe and uninterrupted working by an Indianized staff would still have to be assured. Were the British part of the field army quartered about the Quetta district, however, its line of communication would be shortened by some three hundred miles, and its security greatly simplified. If the further insurance of a defensive treaty with Afghanistan could be achieved, it might be a guarantee against any surprise attack or the rapid passage of a foreign army through Afghanistan itself. At present the undeveloped communications in that country would render a mass invasion of India a very deliberate proceeding.

It is, however, probably a very long way to the achievement of such stable conditions inside self-governing India, as would render feasible a Frontier defence scheme as outlined above. The fact that, by general consensus of opinion, India unaided could not at present defend herself from a hostile Power, points to an inherent weakness, likely to persist, in the structure of the future self-governing State; a weakness due to its numerous divisions of race, caste and creed, the low economic standards of its peoples, their lack of political sense, and the condition of apathy and lassitude engendered in whole communities by a fierce climate and the ravages of endemic disease. In the past, by periodical conquest and settlement, Asiatic races from more temperate climes have infused warlike elements into the thin blood of the Indian plain-dwellers; but with the establishment of British peace, these particular reinforcements have entirely ceased. Yet the successful government of a country which has swallowed up dynasty after dynasty of warrior kings is perhaps only possible through a regular supply of new blood from outside, the lack of which a succession of British governors, administrators, and military commanders during the past two centuries has only partially compensated. Even this stream grows weaker, and, with the attainment by India of real self-government, will finally dry up. It is then that the question of India's defence will become acute.

THE INTERNATIONAL SITUATION

RECENT INTERNATIONAL INCIDENTS

THE BURMA—YUNNAN FRONTIER DISPUTE

THE exact delineation of the Burma—Yunnan frontier in the region of the Northern Wa States has been in dispute since 1904. In that year Sir John Scott fixed a frontier line, now known as the Scott Line. The Chinese authorities, however, claimed a line considerably further to the West, known as the Liuchen Line.

In January, 1934, an expedition, organized by the Burma Corporation, set out for the Northern Wa States to examine the possibilities of developing silver mines in the neighbourhood of Panglong. The party consisted of a number of geologists and surveyors, a political officer, and an escort of about 200 Burma Military Police. The expedition had no intention of moving East of the Liuchen Line, and, in fact, did not do so. In spite of this, their presence in the area was resented by Wa tribesmen, encouraged by the local Chinese officials.

A certain amount of local opposition in the shape of sniping was encountered about the middle of March, and there were a few casualties. About this time also, the local Chinese commander led a party of militia and tribesmen across the Scott Line into the disputed area. As a result of this incursion, H.M. Minister to China was instructed to make strong representations to the Chinese Government against the violation of the Scott Line. So far, however, from obtaining any satisfaction from the Chinese Government, H.M. Minister was told that they intended to send a party into the disputed area "to study conditions on the spot."

By the first week in June considerable numbers of Chinese troops were reported at the following places: Manchiu, Kengmeng, Mengcheng, Mankwei, Yungpang and Panglao. The British forces in this area consist of Burma Military Police, who hold positions at Hopang and Lufang, while a battalion of Burma Rifles is at Lashio in support.

There have been a number of skirmishes between the Chinese troops and the Burma Military Police, West of the Liuchen Line, resulting in casualties to both sides; and reports also indicate that a number of Wa

tribesmen accompanied the Chinese. The most recent accounts report a skirmish between Burma Military Police and the Chinese at Honan Tap, also to the West of the Liuchen Line, in which the latter suffered several casualties.

In the meantime the original party of surveyors of the Burma Corporation, having found no mineral resources worth exploiting, have withdrawn, and the present state of affairs is that the Chinese have occupied the greater portion of the disputed territory. In addition, the Burma Military Police forces are threatened with attack in Burmese territory, i.e., West of the Liuchen Line. So far they have acted strictly on the defensive. There are, however, some hopes of the Chinese troops being withdrawn, as the Chinese Minister for Foreign Affairs, at a meeting with H.M. Minister about the middle of June, stated that, although he thought that the troops engaged were probably discontented tribal elements and not regular Chinese at all, he would, nevertheless, instruct the provincial Governor of Yunnan to withdraw all troops, if there were any there, both from the area West of the Luichen Line, as well as from the disputed area, and to refrain from giving any encouragement to local inhabitants to take up arms.

Since then, mainly owing to the weather, which is exceptionally bad even for this time of year, both sides have been inactive. It has also been suggested that an aerial survey of the area be made in order to assist any future boundary commission. These steps may persuade the Chinese to withdraw their commission of enquiry and come to some arrangement, so that the whole question can be settled in a peaceful atmosphere.

THE END OF THE NEJD-YEMEN WAR¹

In our last number the account of the conflict between King Ibn Saud and the Imam of the Yemen had been traced up to the armistice and the negotiations that were in progress. At that time it was anticipated that the British and Italian warships would shortly be withdrawn from Hodeida, but this was prevented by a deterioration in the local situation. Consequently the ships in question have remained at Hodeida pending its complete evacuation by the Saudi troops, and the establishment of Yemeni control.

By 5th June two of the Idrissis had been handed over to the Saudi authorities at Hodeida, but some hitch occurred over Abdul Wahab Idrissi, and it appears that he did not arrive in Hodeida until considerably later. By the middle of June the Imam had completed the

¹ Continued from International Situation for August, p. 608.

remainder of the conditions of the Treaty, when his son, Abdulla Wazir, who had been conducting the negotiations, left for Hodeida in order to make arrangements for the exchange of ratifications, and for the resumption of Yemeni control. Ratifications were duly exchanged on 22nd June, and Saudi troops forthwith commenced their withdrawal from Hodeida.

The actual text of the Treaty of Taif, as it is designated, is not yet known, but its main provisions are understood to be as follows :—

- (a) It is to be valid for twenty years ;
- (b) In the preamble it is described as a " Treaty of Moslem friendship and Arab brotherhood," designed to promote the " unity of the Arab nation, to enhance its position, and maintain its dignity and independence " ;
- (c) Provision is made for the peaceful settlement of disputes by arbitration ;
- (d) Each State acknowledges the other's complete independence ;
- (e) The frontier between the two kingdoms is set out in detail ;
- (f) Nejran and Yam are admitted to belong to Saudi-Arabia, while Hodeida and the Tihama revert to the Yemen ;
- (g) It is declared that the two nations are one and that their interests are identical. Further, each promises to maintain complete neutrality and to render all possible moral assistance should the other be attacked by a third party ;
- (h) Commerce and communications are to be facilitated between the two countries.

King Ibn Saud has recognized that the return of his Hodeida column via the Tihama would be a delicate military operation, and would in any event involve considerable hardship on the troops at this season of the year, also very difficult maintenance problems. He is, therefore, engaged in trying to take up sufficient shipping to evacuate it by sea.

WITHDRAWAL OF U.S. TROOPS FROM HAITI.

The last company of American marines, who have occupied Haiti since 1915, left Port au Prince on 15th August. The transfer of the administration to Haitian control will be completed in a few months, though the United States will continue to supervise the finances of the Republic until its outstanding obligations have been met.

NAVAL CONVERSATIONS ¹

THE Naval Conversations begun in London in July were resumed on 23rd October, the first meeting taking place at 10 Downing Street, and being presided over by Mr. Ramsay MacDonald. This meeting was attended by the Foreign Secretary, the First Lord of the Admiralty, the First Sea Lord (Admiral Sir Ernle Chatfield) and the Deputy Chief of the Naval Staff (Vice-Admiral C. J. C. Little) as British representatives, and a Japanese delegation, headed by Rear-Admiral Yamamoto, which also included the Japanese Ambassador and Captain Iwashita, Chief of Staff to Admiral Yamamoto. The United States representatives were not present.

THE JAPANESE PROPOSALS

The Japanese delegation laid before the meeting a plan for a Naval Limitation Treaty in substitution for the Washington and London Treaties. It is understood that this introduces Japan's claim for "parity" in the shape of a new formula—"Equal rights for the safeguarding of national security."

It is also understood that, with a view to facilitating a general reduction of naval strengths, Japan may propose that the 5 : 5 : 3 ratio adopted at the Washington Conference should in future be something in the nature of 3 : 3 : 3, and that the principle of measuring strength by global tonnage instead of the present ratio system should be adopted. This would mean that the nations would be free, within their ratios of global tonnage, to build those types of warships which best suit their requirements. But this seemingly ingenuous scheme is somewhat marred by the further Japanese proposal to debar those types which she regards as being most "offensive"—i.e., the aircraft carrier and, perhaps, the capital ship—while retaining the submarine as being primarily a "defensive" type.

At the outset of what must, in any event, prove to be most difficult, and even dangerous, conversations, it would be hard to conceive proposals which would render them more difficult and make agreement less possible. To begin with, whatever may be the British reactions to Japan's claim for "parity," the United States will not hear of it, and have already said so, more or less officially, in unmistakable terms. Japan's desire to see aircraft carriers abolished arises from her fear of the effects of air attacks by sea-borne aeroplanes on her towns, with their vulnerable buildings. But it is most improbable that a general

¹ See also "Problems of the Next Naval Conference" in the August Journal p. 581.

agreement could ever be reached amongst all the Powers that sea-borne aircraft in every shape and form are to be eliminated, and unless there could be such agreement it would be impossible to debar the greater navies from having carriers, because a fleet without aircraft auxiliaries would be, to-day, at a grave disadvantage when opposed by an enemy fleet with them. Efforts towards the further reduction in size of carriers might, however, bear fruit, unless the United States adhere to their predilection for "the biggest of everything."

The Japanese regard the submarine as an indispensable type for national defence. In the light of the experience of the late War, we cannot possibly regard it as being anything but a highly offensive—probably the most highly offensive—type of warship. The British Government has advocated its total abolition as being a real step towards the practical limitation of offensive armaments, and the United States have expressed readiness to agree, provided all the other Powers do the same; unfortunately, this is one of those "gestures" which are regarded as being purely self-interested by many nations as well as Japan. The submarine could only be regarded as a purely defensive type if it were so limited in tonnage, armament, and radius of action that it was really only fit for local defence; it is most unlikely that general agreement to such limitation, and to the wholesale scrapping of existing submarines which would necessarily follow, can ever be reached. Many nations now regard the large or medium submarine as an economical method of providing their sea security, and the outcry against the elimination of this unit of their small forces would be particularly loud in the case of numerous lesser Powers. It seems better that we should face the fact that submarines have come to stay, and no amount of pious argument will induce the majority of Powers to agree to give them up.

THE CAPITAL SHIP QUESTION

The report that Japan advocates the abolition of the capital ship, if it proves to be true, must be regarded as another "gesture." It is understandable that this policy is in keeping with that which desires the elimination of aircraft carriers, because the one is essentially the complement of the other, in that carriers in an aggressive role would have little chance of success without a powerful main fleet to support them. With the advent of Germany's "Deutschlands" and the French "Dunkerque" and "Strasbourg," and with Italy's two 35,000-ton battleships now on the stocks, there is very little likelihood of anything coming of this item in the Japanese plan; rather will she find it necessary, in company with the two other great naval Powers, to release herself

at the earliest possible moment from the self-imposed embargo on battleship construction of the London Treaty. The result of this clause in the Treaty has been to place Britain, the United States, and Japan at a serious disadvantage in the matter of capital ship design as compared to the three above-named Powers.

It cannot be repeated too often or made too clear that the position in which Britain finds herself to-day as regards capital ships is :—

- (a) That no British cruiser could stand up to a German "Deutschland" with the least chance of success ;
- (b) That we have no battleships fast enough to bring that new type of heavily-armed and armoured ship to action ;
- (c) That the three battle cruisers "Hood," "Renown" and "Repulse" are the only ships fast enough and powerful enough to match them ;¹
- (d) That we have only one solitary ship, the "Hood," fast enough and powerful enough to match the new French capital ships ;
- (e) That we shall have no ship of any kind which will be a match for the new Italian battleships ; and
- (f) That this very serious position cannot, as things stand, be righted before 1940, even if we regain our freedom to build and lay down new capital ships on 1st January, 1937.

The Conversations continued with a meeting, on the second day, between the Japanese and American representatives, which include Admiral Standley, Chief of Naval Operations, and Mr. Norman Davis. The result of this interview was to be reported to Washington. These preliminary talks are being conducted with much secrecy, which, perhaps, is as well if they are not to produce an international atmosphere which would make even the calling together of a Conference impossible. It is understood that France and Italy may be asked to take part in them at a later stage, if they are continued.

SOVIET UNION AND THE LEAGUE OF NATIONS

THE Soviet Union was admitted to the League of Nations and accorded a permanent seat on the Council of the League on 18th September. Thirty-nine nations voted in favour of this new partner ; three—Portugal, Switzerland, and Holland—against ;

¹ There are now three "Deutschlands" built or building ; a fourth is due to be laid down before the end of the year ; and there may ultimately be six.

and seven abstained from voting. Mr. De Valera, on behalf of the Irish Free State, while not opposing the entry, protested against the method of admitting the Soviet Union without the ordinary League procedure of examination of a candidate's claim. He felt that the Soviet Government should be called upon to give guarantees for religious liberty in that country.

Three main influences have brought about the entry of this, the strangest of all partners in the odd mixture of nationalities which makes up the League. The withdrawal of Japan and her seizure of Manchukuo have made the Soviet government apprehensive of the future in the Far East, and this has led them to seek the support of those nations who, through the League, object to Japan's activities—although, be it noted, they had the good sense not to carry their objections to the logical sequel of taking action against such a manifest "aggressor." Secondly, the Soviet authorities were beginning to realize that a policy of defensive pacts was not by itself sufficient to provide security, more particularly in view of German ambitions towards eastward expansion and the recent *rapprochement* between that country and Poland. Thirdly, France had become more alarmed than ever by the withdrawal of Germany from the League, and the national and military revival since the advent of Hitler; she was not happy in her innumerable pacts and in her efforts to surround herself with allies; and she had been given clearly to understand that Britain was not prepared to embroil herself more deeply in obligations on the Continent. Accordingly she sought the support of her old ally, Russia, changed in many desirable characteristics though she might be. So the Soviet Union became less and less unwilling to enter the League, while France became more and more desirous of bringing her into the fold, where she might be regarded as an active supporter of general—but more particularly of French—security. Thus, once again, France has had her way with the League, and, however mixed their feelings, the majority of the other partners have officially welcomed the newcomer to their council table.

It is curious to reflect that the League was the outcome of peace after a war waged, as it has been proclaimed again and again, to maintain everything implied by civilization and freedom. Germany, the nation which was regarded as the chief enemy of both those ideals, has been in the League and has left it because, she maintained, it restricted her freedom. Ever since the League has besought her to return. Now it has received with acclamation the very nation whose government has been denounced in every civilized country as representing the very negation of freedom, if not of civilization.

THE SAAR TERRITORY TO-DAY

By MAJOR T. V. SCUDAMORE, V.D., the British Columbia Regiment.

THE time for holding the plebiscite in the Saar Territory is drawing ever closer ; in consequence the difficulties of the Governing Commission are always increasing and the tension in this quarter of Europe is steadily growing more serious.

The Territory has been often described, but the inhabitants have been somewhat overlooked. The people are essentially German in appearance, living, language, and dress. They are almost entirely miners and ironworkers, and display the same characteristics that are found in all mining areas, being dour, silent and, on the surface, rather sullen and resentful of the stranger ; but get to know them better, and one finds a simple, honest, hard-working type who have not had time or opportunity to acquire the luxuries or refinements of existence. It is this characteristic reticence that is worrying the National Socialists in Germany to-day. The miners do not say much, but they think a lot.

Two years ago there would have been no doubt but that the Saar would have voted 95 per cent. for reunion with Germany, and it is a cardinal point of Herr Hitler's policy to recover the territory in its entirety. In Germany the events of the 30th June last are already forgotten—at no time was there very serious disapproval of them. But in the Saar they are still remembered, and some anxiety is felt as to what might be the fate of those who are not wholly National Socialist in sympathy. In the opening days of July British and French newspapers were at a premium. One shop had to telephone for ten times its normal supply, and these were bought up as soon as they arrived. Sitting in the small strip of park which borders the river at Saarbruecken one might discard one's newspaper in the receptacle provided for rubbish, only to see several people from neighbouring seats make a rush for it, one of them carrying it off in triumph, discreetly wrapped in a more innocuous newspaper from Berlin.

Saarbruecken, the capital, has some 60,000 inhabitants, but is still not much more than a provincial town and little has been done to make it in any way attractive. Sarrelouis, a few miles away, was founded by Louis XIV, and its old fortifications are the last remnants of a romantic past, the outer walls being turned into sunken gardens with a fine swimming pool for the inhabitants, in which the sexes are carefully segregated. Neunkirchen and Homburg are two more small towns, and these four came into brief prominence during the Franco-Prussian

War of 1870 as the headquarters of many German generals, whose short residence is commemorated by memorial plaques on a number of houses to which the inhabitants point with pride.

When a census of the Territory was taken in 1910, at a time when no one could have considered any dispute possible, it was found that there were 310 French-speaking families in the whole area. This number would hardly have increased in the years which immediately followed; yet, in 1919, Monsieur Clemenceau announced in an irresponsible moment at Versailles that there were 150,000 inhabitants who spoke French and whose one wish was to be re-united with France. No one has ever met them.

When Germany deliberately wrecked the coal mines in Northern France before evacuating the country under Allied pressure in 1918, it was quite obvious that France was fully entitled to ample compensation, and it was equally obvious that the Saar, with its close industrial connection with Lorraine, should be the territory most suitable to be ceded for a limited period. British and American experts considered that the damaged mines could be working to capacity in five years; French engineers estimated that it would take fifteen years before they could be put in order. The French were, therefore, given the mines in the Saar for a period of fifteen years, and the whole territory was put under a Commission of the League of Nations. Incidentally, it is of interest to note that the mines in Northern France were working to 80 per cent. capacity in five years, and to their full extent by 1926, thus showing that the British and American experts were more nearly correct in their estimate than the French. In fact, France has received her full pound of flesh, but is loath to abandon the whole carcass.

Unfortunately, in the coming plebiscite there are two major difficulties that have to be overcome. If the inhabitants vote for a return to Germany, the mines have to be repurchased from France in gold—a commodity that Germany no longer possesses—and at a valuation to be determined by a neutral commission. The fantastic difference between the German and the French estimate of the value of the mines is a major source of controversy liable to delay handing over the territory; but such a delay will hardly be tolerated by Germany in her present mood. The second difficulty which arises is that, should the inhabitants wish to remain under the League for the time being and until conditions are more settled in Europe, no provision has been made for defining the length of that time. As the voting is to be by communes, it is probable to-day that some communes will vote for safety under the League, and this gives France the opportunity of suggesting that these communes be detached from the whole in the

sacred name of "protecting the rights of minorities"—a pernicious doctrine: no minority was ever satisfied until it became a majority.

It cannot be too strongly emphasized that the Saar is German to the core, but many of the Saarlanders are beginning to think that the core is rotten. They are 75 per cent. Roman Catholic, and the treatment of their co-religionists in Germany has not inspired them with confidence. Money and propaganda have been poured out liberally for fifteen years by both France and Germany, and if France has now ceased, it is only because the frugal French could see no return for the expense.

If France has failed to alienate the Saar from Germany in fifteen years, the National Socialist Government have very nearly achieved that miracle in twenty months. The propaganda has been laid on with such a heavy hand that it has virtually defeated its own ends. Every time the ubiquitous Dr. Joseph Goebels speaks he loses votes for Germany. Each time that the charming Franz von Papen pipes peacefully of the love of the Saar for the Fatherland they remember that he was very nearly shot a few short months ago. "Those whom the gods wish to destroy they first make mad," and it seems like lunacy to threaten a people whose hearts are German with the direst pains and penalties should they elect to vote according to their conscience. The whole area is a hotbed of intrigue and propaganda; not only are there many malcontents who have fled from Germany stirring up hatred and exaggerating conditions—bad as they are in Germany, but also there are numbers of what one can only call gangsters, sent into the Saar by Germany with the deliberate intention of making trouble for the Governing Commission, terrorizing the inhabitants and bullying them into voting for a return to the Fatherland. No precautions or policing can quite prevent the "peaceful persuasion" or the covert threat or the house-to-house canvas, and there is ample evidence to show that, should the Territory revert to Germany, those who voted against such a return, if it is possible to identify them, will most certainly lose their employment, and quite possibly their lives.

Germany is naturally "nursing" the area, and will go to any extreme, legitimate or illegitimate, to regain the Saar. It is this situation which might lead to war.

On arrival at Saarbruecken I went up to a complete stranger and asked him if he could recommend a cheap hotel to me. It was rather unnecessary, as the main street bristles with them.

"Certainly," he replied, "but first answer me two questions. Are you a Jew? Are you a National Socialist?"

"I'm not a Jew," I replied, stroking my Roman nose thoughtfully, "and as an Englishman I am interested in the present form of government in Germany."

"All right," he said, "I will take you to a good little hotel, but don't forget they are 100 per cent. National Socialist."

I found myself at the headquarters of the Deutsche Front, and I was introduced to eight or ten men clustered at the bar. Although I had arrived with the friendliest feelings, having recently received much kindness and hospitality in Germany, and though I approached them in a most practical manner, I was received as little better than a spy and with marked hostility. I was asked several times most offensively whether or not I was a Jew; how the British liked submarines; and what we would do when Hitler landed in England. Only the necessity of keeping my temper under very trying circumstances prevented my treating every question as a direct insult to myself and Great Britain. Without exception these men were of the worst type. Not one had ever been in a responsible position or had a good front-line record. Ignorant and vicious, they were of the type who cause tragedies. They had nothing to lose—not even their honour—and whilst they terrorize the inhabitants they do a great deal of harm to their country and to the great body of decent, kindly, peaceable Germans, who will not believe that such men are employed by their Government.

Now let us look at the Governing Commission, whose difficulties are so great. No Commission could be popular, because these German people see no reason why they should be ruled by alien authorities. Mr. G. G. Knox, as chairman, comes in for the full weight of criticism and abuse from both sides. He is always referred to as an Englishman, and Great Britain gets much of the blame for any decisions which he may make: as a matter of fact he is an Irishman from Cork. His position is an unenviable one, but undoubtedly his intention is to be strictly impartial. In such an explosive atmosphere absolute impartiality is of the highest importance, and even Mr. Knox's slight preference for French cooking and French literature is regarded as a direct affront to German "kultur." This may seem very trivial, but it will be realized by anyone who has lived in any disputable territory, or in new countries which have arisen out of the Great War, how these trivialities are seized upon by mischief-makers. The importance of such trifles was well recognized by Mr. Washington Stephens—quite the most popular chairman the Commission has ever had. If he had *sauerkraut* and a *dunkeles Muenchener Hofbräu* for lunch, he was most careful to order a bottle of *Pouilly* with his *bouchée à la reine* for dinner. When his term expired both French and Germans petitioned that it

might be lengthened, and he remains the supreme example of tact under the most difficult circumstances.

A lack of personal contact and an undue tendency to rely on reports in the Governing Commission are very noticeable. As an example of how the latter are liable to distortion: I was lunching one day with the general director of a large iron foundry a few miles from Saarbruecken.

"I hear there was a big disturbance in Saarbruecken last night," remarked my host, "but I simply can't believe that there were 20,000 people present. Did you see it?"

"I saw the whole thing," I replied, "and it lasted just over half an hour. There were about 250 active participants, and they were controlled by six policemen on foot and two more mounted."

That is typical of the extent to which disturbances are exaggerated locally and later get undue publicity in the foreign press.

The Governing Commission have recommended that the Saar police be increased by 2,000 men recruited from some foreign country where French and German are spoken. The short term of service is hardly likely to attract the best type of man and, whilst the duty will have an element of personal danger for the individual, it must also bring much hostility on the country from which he comes. A force of 2,000 foreigners in uniform in so small an area must leave the impression of a foreign army of occupation. The present police force consists almost exclusively of Saarlanders, and it is claimed that they are not loyal. It is a little hard to understand how 2,000 foreign colleagues will make them more loyal. It is certain, of course, that they are in direct communication with Germany, but so are very many Saarland officials. But they are a highly trained and well disciplined body of men who are quite capable of maintaining order, and there is no reason to think that the ballot will not be a free and secret one, conducted in an orderly manner. The votes will, however, have to be taken to a neutral country and counted that night. The trouble will not arrive before the voting, but the moment the result, whatever it may be, is announced, and then no police force, however large or above suspicion, will be able to control the clash of opposing interests and opposite desires.

The whole situation bristles with difficulties and dangers for those involved in their solution. The economic situation in Germany and her attitude towards the Roman Catholic Church are two factors which weigh heavily in the scale. To what extent these two factors will be modified or exaggerated in the next two months is difficult to foresee. In any event, the happy, prosperous days of the Saar are drawing to an end. Great Britain has no interest in this quarrel, yet indirectly we

become increasingly involved. The chairman of the Commission is a British subject ; so is the chief of the constabulary. Both are in a position of some personal danger. The deputy chief justice of the special court set up to try cases arising out of the plebiscite is also an Englishman. We have nothing to gain by having British subjects employed in this administration, and everything to lose. From the coming storm in the Saar we must stand aloof, but the problems connected with this small territory are worth studying, for it represents one of the most real dangers to European peace.

SOUTH-EASTERN EUROPE

THE recent assassination of King Alexander of Yugoslavia could not fail to arouse anxiety as to whether any unfortunate repercussion of the murder might not involve in its train some European crisis. Recollections of the tragedy of Serajevo in 1914 sprang to mind, and so suggested that the Balkan equilibrium might be upset, with disastrous consequences to Europe. Subsequent events have shown that any evil result accruing from the King's death is not very likely to spread beyond Yugoslavia itself. The real improvement that has been taking place in Franco-Italian relations had already allayed the tension existing between Italy and her Balkan neighbour ; for Yugoslavia in her relations with Italy has always followed the lead given by French policy. Even the anti-Italian manifestations that followed the King's murder had not the least chance of upsetting European peace.

The internal condition of Yugoslavia, however, is another matter. The late King had ruled his country in a highly autocratic fashion ever since he decided to dispense with a parliamentary constitution. That his rule was tolerated must be ascribed in very large part to his reputation and personal influence as a successful soldier in war and a man of decision in peace. How far the divergent Serb and Croat elements in Yugoslavia will accommodate themselves to the rule of a Regency, consisting of three members, is by no means clear : it may well be that these discordant factions will prove difficult to hold within limits. But even if trouble should arise from this source in Yugoslavia, it does not seem probable that international complications must ensue. Apart from the divergences of policy which seemed to throw that country

against Italy, and are now abating, the position of Yugoslavia with regard to the neighbouring Balkan States has undergone a profound modification as the result of recent treaties and agreements that have been concluded in South-East Europe in recent times. These are principally the Balkan Pact, the Turko-Greek Treaty of Friendship and the Russo-Rumanian Treaty of Non-Aggression: to these may be added the agreement concluded at Rome between Italy, Austria and Hungary. The Balkan Pact had as its object the maintenance of the *status quo* by the Succession States surrounding Bulgaria; that is, those countries that had gained territorially by the Peace Treaties were combining to check the "revisionist" aspirations of Bulgaria, who had, of course, lost much ground as the result of the War. King Boris of Bulgaria, however, with the support of the army, decided to make some more friendly overtures to his neighbours and to bring his country into a better position. The main objective of Bulgaria is clearly to regain a seaport on the Mediterranean, where she has lost Dedeagach to Greece as the result of the War. But this end is undoubtedly the most difficult of attainment by the Bulgars. The recovery of the Dobrudja from Rumania, again, is another objective which might encounter very stubborn and armed opposition. Accordingly King Boris elected to make friendly overtures to Yugoslavia. He began by imposing a severe check on the activities of the Macedonian revolutionary "komitajis" who inhabit the much debated territory of Macedonia that has been divided between Yugoslavia and Bulgaria as the result of the War. This gesture, which proved most acceptable to the Yugoslav government, was followed by a personal meeting of the two kings; and so the hereditary enmity between the two countries seems to have abated.

At the same time there is little doubt that German policy has adopted a more cordial attitude towards Yugoslavia, largely as the result of Italian interest in Austria, since the Rome agreement, that appears to bring Italy, Hungary and Austria closer together, may lead Yugoslavia to rate German friendship more highly.

Rumania, another participant of the Balkan Pact, seems to be in a much firmer position than of old, thanks to the new treaties with the Soviet Union as well as with Poland.¹ But Rumanian finances are not in a satisfactory state, and this renders Rumanian dependence on French financial support still more pressing. At the same time serious military reforms are needed, whilst efforts are being made to organize a national manufactory for war material: this latter desire is bringing Rumania into closer contact with France. Nevertheless in other respects

¹ See International Situation for August; p. 606.

Rumania seems to be growing more independent of French guidance, although an understanding with the Soviet Union must draw Rumania closer to the anti-German combination which is founded on the Franco-Soviet *rapprochement*.

A curious factor in the Balkan situation is the estrangement of Albania from Italy. So complete has this grown that the Italian military mission has been withdrawn. Should the new rulers of Yugoslavia play their cards skilfully and bring both Albania and Bulgaria into a Balkan union, Italian influence in South-Eastern Europe might receive a considerable check. This must infallibly redound to the benefit of French prestige in those parts.

FAR EASTERN EVENTS

IT appears that the Soviet Union are preparing to sell the Chinese Eastern Railway to the State of Manchukuo. The matter would seem to be a matter of bargaining, the price taken for discussion being the Japanese offer, on behalf of Manchukuo, of £10,000,000 (gold).

Meanwhile another Manchurian railway problem has been settled. During May and June Chinese and Japanese representatives were engaged in negotiating for the resumption of through traffic on the Peking-Mukden Railway. Agreement has now been reached; the Central Political Council at Nanking have given it their approval, and through traffic was resumed on 1st July. The announcement of the agreement was delayed, probably on account of the desire of the Nanking authorities not to give their political opponents any opportunity of wrecking the agreement before it could be implemented. As it was a bomb exploded on the first train to run from Peking, and four Chinese were killed and ten wounded.

According to the statement made by Mr. Hayashi, the Japanese War Minister, the Japanese troops stationed in Manchukuo are to be increased; this being the result of the Japanese withdrawal from the League of Nations. The Manchukuo army is to be reorganized and the proportion of Japanese officers serving in its cadres is to be heavily reinforced. The settlement of Japanese reservists is to be strongly encouraged.

Opinion in the United States has become greatly exercised over Japanese exploration in Alaska and the Aleutian Islands. Congress

has voted a sum of \$10,000 for purposes of geographical and meteorological research in those parts "in the interests of national defence." Since then two flights of bombing aircraft have been despatched from Washington to Alaska. These aircraft are to fly to the East of the Rocky Mountains, by permission of the Canadian government, in order to reconnoitre the best air routes to Alaska. It is said that their mission is to establish what possibilities may exist for the landing and maintenance of United States aircraft in that territory. These details seem to strengthen the report that the Japanese are held, according to American opinion, to harbour designs on the Aleutian Islands and Alaska; it is thought that they might have in mind the establishment there of bases for aircraft and submarines. Japan's efforts to augment her air forces are certainly significant, but a more obvious reason for such action is the recent air activity of the Soviet Union in Northern Siberia. Japan might account for her interest in the American mainland by pointing to the possibility of air communication being established between the Soviet Union and the United States via Kamchatka, Behring Strait, and Alaska.

GENERAL SERVICE NOTES

COMBINED EXERCISE

A combined exercise, in which all three Services took part, was carried out on the Yorkshire Coast between 10th and 13th September. The exercise took the form of an opposed landing, and was essentially designed to practise co-operation between the Services, to exercise the staffs in embarking a force and putting it ashore on an enemy's coast, to give practice in handling troops during and after landing, and experience in operating a mobile defence, and to test inter-Service communications.

The general idea was that Britannia—whose territory comprises roughly England, North of the Wash, and Scotland—is at war with Nordania, a continental neighbour. Britannia's capital is Glasgow, and she possesses five militia divisions, but only a weak navy and air force. Her fleet is based on the Clyde. Nordania is a powerful State and, as she is unable to bring Britannia's fleet to action, she has decided to effect a landing on the Yorkshire coast with a view to threatening Glasgow and the Clyde. To the South of Britannia is Mercia, a republic in a state of chaos.

The forces which actually took part in the exercise included the Home Fleet, under Admiral Sir William Boyle; troops of the Northern Command—General Sir Alexander Wardrop; and aircraft from the Inland Area Command—Air Vice-Marshal A. M. Longmore. The invading force—the 13th and 14th Infantry Brigades—embarked at Hull and joined the Fleet some 30 to 40 miles out at sea.

The cruisers and destroyers carrying the force moved in towards the shore during darkness on the night of 10th–11th September. When close in-shore the troops were transferred to ships' boats and lighters, and landed on the open beaches just before daylight. The weather conditions were perfect and the organization worked well; but, though the landing operation served the purpose of the particular objects of the exercise, it was very unrealistic in many respects. For instance, on account of the absence of merchant-ship transports, tanks and artillery on the scale which would be required by a division were not embarked. These units and the cavalry moved by land to the vicinity of the infantry landing places and, after an interval representing the estimated time it would have taken to disembark them, were allowed to join up with the invading force. Yet, in spite of modern developments, hoisting out heavy vehicles and horses in an open roadstead, ferrying them ashore in lighters—probably under fire by shore artillery or aircraft—and landing them on an open beach, are practical problems which cannot be regarded as capable of solution with mechanical precision and of being carried out to an exact time-table.

Again, unless Britannia was to be regarded as a semi-savage country, the landing craft would certainly have had to contend with enemy aircraft and submarines. It is true that Nordania seems to have secured local command of the air with the aeroplanes from H.M.S. "Courageous"; but Britannia appears to have utilized the defending aircraft mainly for reconnaissance work, while both sides used aeroplanes for photographic work, presumably for record purposes more than for necessary intelligence. The only submarines engaged in the exercises were employed by Nordania to buoy and light the approaches to the landing beaches.

The Defence Force organized a coast watchers' service, which is reported to have worked well ; but, although the weather was clear and the sea calm, the boats with the invaders were not detected until they were some 300 yards from the beach, and two parties landed unobserved.

Once on shore the invading force pushed inland to secure room to manoeuvre and the subsequent operations were essentially of a military character¹ ; the Navy had performed its main task—although in war it would have only just begun it ; while the Air Force was only cast to play a comparatively auxiliary role, which could scarcely have been its true one.

It is quite realized that the limitations imposed were accepted beforehand, and it is obvious that in a peace-time exercise of this sort there are many difficulties in the way of faithfully reproducing war conditions. Any efforts to translate tests of inter-Service work from the atmosphere of the War and Staff College class-rooms to the truer setting of sea, land, and air must make for improvement ; but it is essential that the difference between the problems as they were presented on this occasion and as they would be in reality should be fully recognized, and that the comparative simplicity of the tasks should be taken into full account when appraising the results.

SOVIET UNION

DEPARTMENT OF WAR REORGANIZED.—By a decree of the Central Executive Committee of the U.S.S.R., the Revolutionary War Council and the Collegium of the People's Commissariat of War and Marine have been abolished, and the People's Commissariat is to be renamed " the People's Commissariat of the Defence of the U.S.S.R." (" Narkomoborona, S.S.S.R.").

Voroshilov remains Commissar for War, with two Deputies, Gamarnik and Tukhachevsky.

¹ See also article on " The Training of the Army, 1934," p. 728.

NAVY NOTES

GREAT BRITAIN

THE FLAG LIST.

By the death of the Earl of Cork and Orrery on 16th October, his cousin, Admiral Sir William H. Dudley Boyle, K.C.B., Commander-in-Chief of the Home Fleet, has become the twelfth Earl.

Admiral Sir Thomas Sturges Jackson, K.C.V.O., who died on 9th September at the age of 92, was the senior officer of his rank on the retired list. He entered the Royal Navy in April, 1856, and was a midshipman at the capture of the Peiho Forts in 1858.

The officer next senior to him on the retired list is Admiral Albert Baldwin Jenkins, who was 88 in March last.

FLAG APPOINTMENTS.

AMERICA AND WEST INDIES.—Vice-Admiral the Hon. Matthew R. Best, C.B., D.S.O., M.V.O., appointed Commander-in-Chief, America and West Indies, is due at Bermuda on 19th November. Vice-Admiral the Hon. Sir Reginald Plunkett-Erle-Drax, K.C.B., D.S.O., whom he succeeds, will sail for England in H.M.S. "Norfolk" on 21st November.

EAST INDIES.—Vice-Admiral Frank F. Rose, C.B., D.S.O., appointed Commander-in-Chief, East Indies, will assume command on 12th December in succession to Vice-Admiral M. E. Dunbar-Nasmith, V.C., K.C.B.

DEVONPORT DOCKYARD.—Rear-Admiral Arthur L. Snagge, C.B., is to be Admiral-Superintendent, Devonport Dockyard, in succession to Vice-Admiral Harold O. Reinold, C.B., C.V.O., to date 2nd March, 1935.

THE SINGAPORE BASE.

Their Lordships have decided that the appointment in charge at Singapore is to be held by a Commodore of the Second Class. Captain W. P. Mark-Wardlaw, D.S.O., has been selected as Commodore-in-Charge, in succession to Captain M. R. J. Maxwell-Scott, D.S.O., and he hoisted his broad pennant and assumed command of the naval establishments on 1st September, 1934.

PERSONNEL.

DARTMOUTH CADET ENTRIES.—Now that the surplus of more senior officers is about to be disposed of, larger entries of Cadets can be accepted at Dartmouth. The average entry will be raised from 33 per term to 40 per term. In future, steps will be taken to publish the number of vacancies that will be offered each term.

SURPLUS LIEUTENANT-COMMANDERS.—The special scheme for the retirement with pension of surplus Lieutenant-Commanders and senior Lieutenants was closed on 31st August. Since it was instituted in February, 1931, a total of 183 officers have taken advantage of the terms offered. The further scheme for retirement with

a gratuity for Lieutenants and Lieutenant-Commanders under forty remains open until January, 1935.

CONSOLIDATION OF PAY.—H.M. Government have decided that as from 1st September, 1934, the rates of pay of officers shall be consolidated at 9½ per cent. below the standard rates, which corresponds with the cost of living index figure of 55. Until, however, the state of the national finances permits of the issue of the new consolidated rates in full, they will be subject to an abatement, and, in common with officers of the other defence forces and the Civil Service, R.N. and R.M., officers will continue to be paid at the rates which have been in force since 1st July, 1934, when a partial restoration of the 1931 cuts in pay was made. These rates represent a reduction of 10 per cent. upon the standard rates of 1919.

UNIFORM CHANGES.—Their Lordships have decided, with His Majesty's approval, that in future with No. 3 (frock coat with epaulettes) dress, white trousers and white shoes should be worn on board and, weather permitting, on shore, both in home waters and abroad. Wellingtons or half Wellingtons will continue to be worn in bad weather on shore.

It has been further decided that for the future miniatures of medals and decorations are to be worn on a bar on the left lapel of ball dress and mess dress, extending over the lapel towards the shoulder if necessary; they are not to extend beyond the lapel on the inner side. Ribbons of miniatures are similarly to be worn on the lapel of mess undress jackets.

OGILVY MEDAL.—The Ogilvy Gold Medal for the year 1934, awarded to the officer taking first place in the examinations to qualify for Torpedo Lieutenant, has been awarded to Lieutenant H. G. Craig, H.M.S. "Vernon."

ADVANCED ENGINEERING PRIZE.—A prize of £20 has been awarded to Lieutenant (E) A. E. Turner, R.N., H.M.S. "Berwick," on the result of the examination held on conclusion of the advanced engineering course at the R.N. College, Greenwich, in July last.

SELECTION FOR PROMOTION.—Defects in the arrangements for the advancement of ratings have been disclosed by a recent review, and a new Fleet Order on the subject dated 19th July states that their Lordships, while adhering to the principle of the roster system, have felt it desirable to invest Commanders-in-Chief with the power to rate up outstanding men whose abilities and fitness for higher rating are brought to their notice. These advancements are limited at present to ratings of the seaman, communication, and engine-room branches, and the numbers allotted are such that they will not interrupt the normal working of the roster system. "The present system," it is stated in an introductory note to the order, "does not always provide for the early advancement of the exceptionally outstanding man."

SEAMEN'S BLACK SILKS.—The time-honoured black silk handkerchief of the sailor, which is often (quite erroneously) referred to as a mark of mourning for Nelson, has been altered in shape by a fleet order dated 16th August. The existing square pattern will be replaced by an oblong pattern (50 in. by 12 in.) as soon as the stocks of the existing pattern are exhausted. The ends should be stitched together in such a position as to form a loop of suitable length for the wearer, and the silk then folded in the usual way.

EXERCISES AND CRUISES.

THE HOME FLEET.—The autumn cruise of the Home Fleet began on 6th September, and was, as usual, to bases on the North-East Coast. The Fleet

co-operated in the Combined Operations Exercise in the Humber area with units of the Army and R.A.F. from 10th to 13th September.¹ Afterwards it was at Rosyth and Invergordon until 31st October. Vessels of the 6th Destroyer Flotilla visited, Aberdeen and Dundee from 11th to 17th October.

MEDITERRANEAN.—The second summer cruise of the Mediterranean Fleet took place from 29th August to 25th October, chiefly to Adriatic ports. The fleet flagship, "Queen Elizabeth," visited Alexandria for the first week in September, and from the middle of that month joined other units off Split, Brioni, Stari Grad and Gruz. Trieste was visited by the "Resolution," "Furious" and other units; Venice by the cruisers "London," "Durban" and "Despatch"; and most of the ships reformed off Split (Spalato) from 1st to 7th October.

EAST INDIES.—The flagship "Hawkins" arrived at Colombo on 19th September on completing her East African cruise. She is to return to England by 1st March, 1935, and will be replaced by the "Norfolk." The "Emerald" commissioned at Chatham on 31st August, after large repairs, for service on the Station in place of the "Enterprise," which was transferred to dockyard control at Chatham on 3rd September. The "Emerald" left for the East Indies on 12th September. The "Colombo" left Trincomalee on 27th August for Vizagapatam, Madras, and other Indian ports.

CHINA.—Most of the ships in the Far East have been at Wei-Hai-Wei during the summer months. The flag of the Commander-in-Chief was transferred there on 1st September from the "Suffolk" to the "Kent" on her return to the station after refit and recommissioning. The "Capetown" arrived at Hong Kong on 22nd September to replace the "Caradoc" for duty in the Yangtse. Destroyers of the 8th Flotilla left Wei-Hai-Wei on 15th September for a cruise to Japanese ports, and were caught in the typhoon which caused the death of over 2,000 people on 21st September. They anchored in the lee of an island of the Inland Sea, and had an anxious and arduous time. They arrived at Kobe on 21st September.

AMERICA AND WEST INDIES.—The flagship "Norfolk" and the "Danae" spent the summer months in the vicinity of British Columbia, visiting Californian ports on their return voyage to Bermuda, where they arrived in October. The "Dragon" was off the eastern seaboard of Canada, and visited Newport, R.I., at the time of the yacht races for the America's Cup, when Captain W. F. Wake-Walker and his officers and men were given special facilities to witness the contests from the U.S. destroyers which kept the course. The "Exeter" cruised off the Atlantic coast, and the "York" off the Pacific coast, of South America.

PRIME MINISTER'S TOUR.—During his holiday tour Mr. Ramsay MacDonald, the Prime Minister, travelled from Halifax to St. John's, N.F., in the cruiser "Dragon," arriving on 9th August. From St. John's he made a cruise in H.M.S. "Scarborough" to St. Anthony, the Grenfell mission station, arriving on the 16th and staying several days.

AFRICA.—The flagship "Dorsetshire" began a cruise up the West coast of Africa on 26th September which was to last until 7th December. The "Carlisle" returned home to recommission on 5th September.

The ex-South African Government minesweepers "Immortelle" and "Sonneblom," commanded by two officers from H.M.S. "Carlisle," Lieutenants N. J. Crossley and J. B. P. Stirling respectively, left Simonstown on 26th July for

¹ See General Service Notes, p. 830.

England, making the journey in short stages, and calling at Walvis Bay, Lagos, Takoradi, Freetown and Bathurst. They arrived at Plymouth on 26th September, and have reverted to their original names of "Eden" and "Foyle." One of them will be commissioned with a Devonport crew to relieve the "Kennet" in the 1st Minesweeping Flotilla.

THE MELBOURNE CENTENARY.

H.M.S. "Sussex" was recommissioned at Chatham on 18th July by Captain S. S. Bonham-Carter, D.S.O., for passage to Australia to serve as an exchange cruiser. She left Sheerness on 24th August for Gibraltar and Marseilles, where H.R.H. the Duke of Gloucester was embarked on 5th September for his voyage to Australia to represent the King at the centenary celebrations at Melbourne. The Duke's Australian tour will end on 10th December, when he will leave for New Zealand and come home in H.M.A.S. "Australia." The latter ship is due at Suva on 30th January, Apia on 4th February, Panama Canal zone on 23rd February, and Kingston, Jamaica, on 28th February.

The New Zealand cruisers "Dunedin" and "Diomedé," the former flying the flag of Rear-Admiral F. Burges Watson, D.S.O., left Auckland on 17th September for Sydney, Hobart and Melbourne to take part in the centenary.

The Royal Indian Marine sloop "Hindustan" left Bombay on 7th September to visit Australia for the celebrations.

NEW CONSTRUCTION:

THE 1934 PROGRAMME.—Contracts for the flotilla leader and eight destroyers of the 1934 programme were notified by the Admiralty on 13th October, subject to the settlement of certain points of detail. These were the first orders to be announced of the 1934 construction programme. The announcement was made some three months earlier than the corresponding announcement of the 1933 programme. The leader will be built by Cammell Laird and Co., Ltd., Birkenhead, and two destroyers each by the following firms:—W. Denny and Bros., Ltd., Dumbarton; Swan Hunter and Wigham Richardson, Ltd., Wallsend-on-Tyne; Scotts Shipbuilding and Engineering Co., Ltd., Greenock; and Parsons Marine Steam Turbine Co., Ltd., Wallsend-on-Tyne. Hulls of the vessels allocated to the Parsons Steam Turbine Company will be built by Vickers-Armstrong, Ltd., at Walker-on-Tyne.

THE 1933 PROGRAMME.—Destroyers of the "Greyhound" type in this programme have been laid down as follows:—"Glowworm," Thornycroft, 15th August; "Garland," Fairfield, 22nd August; "Grafton," Thornycroft, 30th August; "Gipsy," Fairfield, 5th September; "Gallant," Stephen, 15th September.

The convoy sloop "Bittern," laid down at Clydebank on 9th March, 1934, is to be renamed "Enchantress," and in addition to performing her normal duties will be made available for occasional use by the Admiralty Board for inspections of naval ports and visits to the Fleet. It has been decided to pay off the present "Enchantress," now over thirty years old, and place her on the sale list.

THE 1932 PROGRAMME.—Of the three cruisers of this programme the "Sydney," originally named the "Phæton," was launched on 22nd September at the Swan Hunter yard, Wallsend, by Mrs. Bruce, wife of the High Commissioner for Australia; and the "Apollo" was launched at Devonport Dockyard on 9th October by Lady

Florence Boyle, wife of the Commander-in-Chief of the Home Fleet. Both these vessels will be of the modified "Leander" type, of 7,000 tons.

The "Galatea," which is the second ship of the "Arethusa" type, of 5,200 tons was launched on 9th August at Scotts' yard, Greenock.

The destroyer depot ship "Woolwich" was launched at the Fairfield yard, Govan, on 20th September.

The following is the revised and completed list of launches of the eight destroyers of the 1932 programme:—"Fearless," 12th May; "Fame," "Firedrake" and "Forester," 28th June; "Foresight," 29th June; "Fortune," 29th August; "Fury," 10th September; "Foxhound," 11th October.

The submarine "Snapper" was launched at Chatham Dockyard on 25th October.

The "Hussar," last of the four sloops of this programme, was launched by Messrs. Thornycroft on 29th August.

THE 1931 PROGRAMME.—The following are the revised completion dates for the destroyers of this programme:—Flotilla leader "Exmouth," 31st October; destroyers "Escapade," 30th August; "Electra," 13th September; "Echo," 22nd October; "Esk," 26th September; "Escort," 30th October; "Express," 31st October; "Eclipse," 29th November; "Encounter," 2nd November.

Completion dates for the three submarines of the 1931 programme are:—"Severn," at Barrow, October; "Sealion," at Birkenhead, 15th November, "Salmon," at Birkenhead, mid-December.

THE FLEET AIR ARM

H.M.S. "Hermes" was commissioned by Captain the Hon. George Fraser, D.S.O., after large repairs, with a Devonport crew as an independent command for trials and subsequent service on the China Station on 18th September. The "Hermes" was due to leave Portsmouth on 18th November for the Far East.

H.M.S. "Eagle," Captain L. V. Wells, D.S.O., will leave the China Station after the arrival of the "Hermes" for the Mediterranean. There the "Eagle" will replace the "Furious," Captain J. S. M. Ritchie, which has been temporarily lent from the Home Fleet. The "Furious" left Malta on 15th October for Devonport on the conclusion of her Mediterranean service.

H.M.S. "Emerald," which was commissioned on 31st August at Chatham after large repairs by Captain J. G. Grace for service in the East Indies, embarked a Hawker "Osprey" aircraft (No. 406 Flight).

H.M.S. "Ramillies," which was completed to full crew at Sheerness on 11th September by Captain R. Leatham, embarked a "Fairey III.F" aircraft (No. 447 Flight).

The cruisers "Berwick" and "Shropshire," due to complete for sea and leave England in November, will be allotted aircraft of the "Osprey" type.

ROYAL MARINES

PROMOTIONS AND RETIREMENTS.—Lieutenant-General L. C. Lampen was placed on the retired list at his own request on 1st September, from which date the following changes took effect:—Major-General G. R. S. Hickson, C.B., C.B.E., to be Lieu-

tenant-General; Colonel 2nd Commandant A. S. Cantrell placed on the retired list at his own request; Lieutenant-Colonel J. M. Tuke, O.B.E., to be Director of Naval Recruiting, vice Cantrell; Major and Brevet Lieutenant-Colonel E. C. Weston to be Lieutenant-Colonel; Captain G. W. M. Grover to be Major.

The following further changes were gazetted with effect from 1st October:—Colonel Commandant (temporary Brigadier) R. H. Darwall, C.B.E., D.S.O., to be Major-General; Colonel 2nd Commandant W. H. L. Tripp, C.B., D.S.O., M.C., to be Colonel Commandant (temporary Brigadier), Chatham Division; Lieutenant-Colonel H. C. Pope to be Colonel 2nd Commandant (with seniority as Colonel 1st July, 1933), Portsmouth Division; Lieutenant-Colonel A. D. Welch, Major H. M. Franks, and Captain W. E. Webber placed on the retired list at their own request.

ROYAL MARINE POLICE.—An Order in Council published in the *London Gazette* on 9th October provides that in consideration of the increased responsibilities attaching to the post of Chief Constable, Royal Marine Police, the remuneration of this post should be improved. Sanction was given to a scale of salary of £900 a year, rising by annual increments of £45 a year to £1,080 a year.

The last link between the Metropolitan Police and the Admiralty establishments was severed at midnight on 12th–13th August, when the Royal Marine Police took over responsibility for police duties at Devonport Dockyard.

DOMINION NAVIES

ROYAL AUSTRALIAN NAVY.

EMPIRE DEFENCE.—In a statement at Perth, W.A., on 3rd September, Rear-Admiral W. T. R. Ford, C.B., who assumed command of the Australian Squadron in April last, said that unless the Empire was prepared to relinquish everything fought for in the past a policy of big building would have to be adopted. The Empire's naval strength was to-day weaker than at any time since the Armada.

ROYAL CANADIAN NAVY.

PROMOTION TO REAR-ADMIRAL.—Commodore Walter Hose, C.B.E., late Director of the Naval Service of Canada and Chief of the Naval Staff, has been promoted to the rank of Rear-Admiral in the Royal Canadian Navy, to date 30th June, 1934, and placed on the retired list from 1st July.

Rear-Admiral Hose is the third officer to hold flag rank in the Canadian Navy. The first was Admiral Sir Charles Kingsmill, the original Director of the Naval Service from 1908; and the other was Admiral W. Oswald Story, who was lent from the Royal Navy in the War to be S.N.O. at Esquimalt.

ROYAL INDIAN NAVY.

NAVY BILL PASSED.—The Council of State on 6th September passed the Indian Navy (Discipline) Bill, which gives the full status of a Navy to the Royal Indian Marine, and provides that its discipline shall be regulated, like that of Dominion Navies, by the British Naval Discipline Act, suitably amended to meet local conditions. This will replace the Indian Marine Act of 1887, which is out of date and limited in its scope to Indian waters.

It was in 1926 that it was decided, on the advice of a departmental committee

under Lord Rawlinson, to reorganize the service as a combatant force. The necessary Imperial Act was passed by the British Parliament in 1927. The India Legislative Assembly in 1928 threw out the Bill by one vote, not so much because they were opposed to it in principle, but as a gesture to indicate their opposition to the rule whereby the Indian Military and Naval Services are "reserved" from the control of the Assembly.

The administrative task of reconstruction has been undertaken during the regime of Vice-Admiral Sir Humphrey Walwyn, K.C.S.I., C.B., D.S.O. On completing five years as Flag Officer Commanding and Director of the Royal Indian Marine, Sir Humphrey is being succeeded from 16th November, by Rear-Admiral A. E. F. Bedford, C.B.

NEW SLOOP.—H.M.I.S. "Indus," building for the Royal Indian Navy by Messrs. Hawthorn Leslie and Co., Ltd., Hebburn-on-Tyne, was launched on 24th August, the naming ceremony being performed by Lady Walwyn. The "Indus" is intended for service as flagship. She is 297 ft. long, with a displacement of 1,350 tons, and a designed speed of 16½ knots.

FOREIGN NAVIES

CHILE

The U.S.A. naval attaché has been withdrawn from Chile, and in future his duties will be performed by the attaché at Buenos Aires, who acts for the whole of South America.

FINLAND

BRITISH ADVISER RETURNS.—Captain M. C. Despard, D.S.C., R.N., who was appointed Naval Adviser to the Finnish Government on 1st April, 1929, returned to England in October on the completion of his work. The Finnish Government and military authorities publicly expressed their appreciation of his valuable assistance in organizing the country's naval defence.

FRANCE

CHANNEL FORCE STRENGTHENED.—Concurrently with the appointment of Vice-Admiral Darlan to command the French Northern Squadron in October it was announced that this force would be strongly reinforced. The 23,000-ton battleships "Provence" and "Bretagne" are to leave Toulon at the end of the year for Brest to join the Squadron, and the former will become flagship. The battleship "Lorraine" will also join this Force on completing modernization.

Whereas in 1931 the forces in full commission in the Channel included nothing above the size of flotilla leaders, in 1935 the composition will be:—Three battleships, two 7,000-ton cruisers ("Duguay-Trouin" and "Lamotte-Picquet"), three divisions of destroyers, two groups of submarines under a Rear-Admiral, and coastal motor craft.

NEW CONSTRUCTION.—The 10,000-ton cruiser "Algérie," completed this year, on 4th October became the flagship of Vice-Admiral Mouget, who succeeded Vice-Admiral Dubois in command of the First Squadron at Toulon. The former flagship was the battleship "Lorraine."

The cruiser-minelayer "Emile Bertin," of 5,886 tons, designed for 34 knots with 102,000 horse-power, attained a speed of 39.8 knots on trial in August.

The coastal submarine "Iris" was launched at Nantes on 23rd September.

The sloop "D'Iberville," built for colonial service, was launched on 23rd September at Gore de Bouc, near Marseilles.

NAMES OF NEW SHIPS.—The following names have been assigned to the ships of the 1934 programme detailed in last quarter's Notes: battle cruiser "Strasbourg," destroyer "Volta," 1st-class submarine "Roland-Morillot," 2nd-class submarine "Aurore."

TOUR OF INSPECTION.—M. Piétri, Minister of Marine, completed in mid-September a voyage of inspection to the naval bases at Cherbourg, Brest, Lorient, Toulon and Bizerta. According to *The Times* Paris Correspondent, this tour may be expected to lead to reorganization of the defences of the strategic triangle Oran-Toulon-Bizerta, in conformity with the redistribution of naval forces in the Mediterranean and Atlantic. The scheme would include the completion of underground reservoirs for liquid fuel and their defence, the completion of the new batteries at Bizerta, and the dredging of the lagoon there to a depth of about 40 ft.

OIL FUEL SUPPLIES.—Writing in the *Echo de Paris*, Capitaine de Vaisseau Somborn gives some details of the expenditure of the 595,000,000 francs recently voted by the Government for oil fuel supplies. Of this sum 144,000,000 francs are, he says, to be used for the accumulation of oil fuel. He also states that it is proposed to complete by 1938 sufficient tanks to hold 1,500,000 tons of oil fuel and 1,627,000 tons of Diesel oil. He estimates the present consumption to be 3,000,000 tons of oil fuel and 20,000 tons of Diesel oil annually. This figure he considers would have to be multiplied by ten to meet war requirements.

NAVAL AIR SERVICE.—It is reported that with the transfer of naval aircraft from the Ministry of Air to the Ministry of Marine, the strength of the squadrons is now as follows: ship-borne aircraft—five squadrons; shore-based aircraft—eleven squadrons; naval co-operation autonomous aircraft—six squadrons.

GERMANY

BALTIC EXERCISES.—The German Fleet returned to Swinemunde on 15th September from gunnery practices in the Baltic. Special excursions were run from Berlin to enable the public to inspect the ships.

"HESSEN" SCRAPPED.—The battleship "Hessen" (13,000 tons, four 11-in. and twelve 6.7-in. guns) was ordered to be withdrawn from the active list in September. The "Hessen" was completed in 1905, and was in the Second Squadron of the High Seas Fleet during the War and at Jutland.

"DEUTSCHLAND'S" VISIT.—The first visit of a German battleship to Great Britain since the War took place from 18th to 22nd October, when the new armoured ship "Deutschland" visited Leith.

ITALY

BATTLESHIPS LAID DOWN.—The keels of the two 35,000-ton battleships which, as reported in these Notes of last quarter, Italy has decided to build owing to the failure of the Disarmament Conference were laid down, at Genoa and Trieste respectively, on 28th October—the anniversary of the Fascist "March on Rome." They are to be named the "Vittorio Veneto" and the "Littorio."

CRUISER LAUNCH.—The cruiser "Muzio Attendolo Sforzo," so named after the Italian Army leader of the XIVth century, was launched at the San Marco yard, Trieste, on 9th September. She belongs to the "Condottieri" type (eight 6-in. guns, six 3.9-in. A.A. and eight smaller guns, with four torpedo tubes).

NEW SUBMARINE.—The submarine "Galileo Ferraris," of the "Settembrini" class, was launched on 12th August at Taranto. She has a displacement of 878 tons (1,231 submerged), with a speed of 17 knots on the surface and 8½ submerged, and is armed with two 3.9-in. guns and eight torpedo tubes.

VISIT TO AUSTRALIA.—The cruiser "Diaz" left Spezia at the beginning of September for Australia, to represent Italy at the centenary celebrations at Melbourne. She was commanded by Captain Angelo Iachino, formerly Italian Naval Attaché in London. The choice of this new ship was described as specially marking the friendship of Italy for the British Empire.

NAVAL EXERCISES.—Naval exercises were held during the first week of August, when the Fleet was visited by Signor Mussolini, who flew back to Rome on the 7th after witnessing the concluding stages of the manœuvres off Gæta from the cruiser "Pola." A total of forty-eight vessels, including eight submarines, took part in the operations.

TRAINING AFLOAT.—Early training afloat is given in masted ships, and the sailing training ship "Vespucci" takes large classes of cadets for prolonged cruises. The latest programme included 100 cadets, who were to spend 60 days out of 96 actually at sea. In addition there is a second sailing ship, the "Colombo," and sailing brigs are maintained at Pola.

Later in an officer's career, as a lieutenant of three to four years' seniority, he is given command of a destroyer for two months in a flotilla which is specially maintained for training purposes. During this period the flotilla goes to sea for four days a week, and occasionally for a short cruise. It is exercised in tactical manœuvres, gunnery, and torpedo practices. Initiative is specially encouraged in the commanding officers, and no notice is taken of minor accidents or collisions. Every lieutenant also does a period of two months in a training submarine flotilla, but the submarines have more experienced officers in command.

JAPAN

MANŒUVRES.—Manœuvres on a large scale under H.I.H. Prince Fushimi, Chief of the Naval General Staff, commenced on the 1st August. Independent practices and exercises were carried out until October, when the fleet concentrated for combined exercises. The guard squadrons at the various naval stations were included in the latter and were organized into a special Fourth Fleet, commanded by Vice-Admiral Hyakutake, flying his flag in the battleship "Ise." The manœuvres were due to conclude in the middle of October with the assembly of the fleets in Osaka Bay.

POLAND

NEW CONSTRUCTION.—Four small trawler mine-sweepers and one minelayer, of about 2,000 tons, are reported to be under construction. One of the minesweepers is being built at Gdynia, one at Danzig and two at Modlin. The minelayer is being constructed in France. Two destroyers and six submarines are also projected.

PORTUGAL

NEW SLOOP.—The "Bartolomeu Dias," second of the first-class sloops or "aviso" which Messrs. Hawthorn Leslie and Co., Ltd., are building to the order of the Portuguese Government, was launched on 10th October from their Hebburn shipyard. The vessel is designed specially for service in the Portuguese Colonies, and is the fourth which Messrs. Hawthorn Leslie have built for the Portuguese naval reconstruction programme.

SIAM

NEW CONSTRUCTION.—The hulls of two destroyers are to be built at Trieste. Their gunnery armament will be supplied by Vickers, and their torpedo armament by Bofors of Denmark.

Three 55-ft. coastal motor-boats have been ordered from Messrs. Thornycroft, and are to be delivered early in 1935.

SOVIET UNION

It is constantly reported that warships are to be built in France for the Soviet Union navy, and mention is made of four 7,000-ton cruisers and four destroyers, which it is stated are to replace some of the older vessels in the Baltic Fleet. It is a fact that a Soviet Mission visited Brest and Toulon during last summer, and was entertained by the naval authorities.

SWEDEN

CRUISER-CARRIER TRIALS.—The new cruiser-carrier "Gotland," which is of special interest in view of her unique design, carried out speed trials in September. On a displacement of 4,600 tons, and with a speed of 27 knots, this vessel mounts six 6-in. guns, with smaller A.A. guns and torpedo tubes, and also has a catapult and accommodation for eight seaplanes. Her estimated cost is £910,000.

UNITED STATES

RETURN TO THE PACIFIC.—The U.S. Fleet left Hampton Roads and Charleston on 15th September to return to the Pacific. It is expected at San Diego and San Pedro on 1st December. Mr. Swanson, Secretary of the Navy, announces that next summer's manœuvres of the Fleet will be conducted in the North Pacific in the large triangle bounded by Alaska, Puget Sound and Hawaii, in accordance with the policy of "fleet concentrations in various areas contiguous to American territorial waters."

FLEET IN COMMISSION.—The Operating Force Plan for the fiscal year 1934-1935 provides for the following ships in commission:—14 battleships; 15 heavy and 10 light cruisers; 72 destroyers; 54 submarines; four aircraft carriers; five minelayers; one airship. These, with patrol vessels, auxiliaries, minesweepers, etc., make a total of 306 ships.

NEW CONSTRUCTION.—On the 22nd August contracts were placed and orders given for the construction of 24 warships—13 in navy yards and 11 in private yards. These include one 10,000-ton 8-in. cruiser and three 10,000-ton 6-in. cruisers; two flotilla leaders of 1,850 tons, 12 destroyers of 1,500 tons, and six submarines of 1,300 tons. Work on this programme is to be commenced as soon as possible.

When these 24 ships are completed, 78 more will still be required to bring the fleet up to the strength authorized by treaty, and a further programme of 24 battle-ships is projected for the fiscal year beginning 1st July, 1935.

There are 45 warships now under construction: three 10,000-ton 8-in. cruisers, four 10,000-ton 6-in. cruisers, 31 destroyers, four submarines and two aircraft carriers.

NAVAL AIR SERVICE.—The Navy Department now estimates that 910 aircraft will be required in addition to the 1,000 previously authorized in order to bring the Naval Air Service up to treaty strength.

ACCELERATED PROMOTION.—It has been approved that 350 naval officers found unqualified for advancement above the grade of senior Lieutenants shall be retired. A further 600 officers who have served seven years as junior grade Lieutenants or fourteen years as Lieutenants without promotion are being examined by a selection board, and 60 per cent. of that number will be retired automatically on 30th June, 1936. To provide for future requirements all graduates of the Navy Academy will in future be eligible for commissions. Hitherto only the upper half of the graduated classes at Annapolis have been eligible.

ARMY NOTES

HOME

APPOINTMENTS AND PROMOTIONS.

H.M. the King has been pleased to approve the following appointments:—

Colonel (temporary Brigadier) H. C. Maitland Makgill Crichton, C.M.G., D.S.O., late the Royal Scots Fusiliers, to be Aide-de-Camp to the King, in succession to Colonel (temporary Brigadier) W. D. S. Brownrigg, D.S.O., promoted Major-General; Colonel R. L. McCall, D.S.O., M.C., to be Aide-de-Camp to the King, in succession to Colonel R. Luker, C.M.G., M.C., retired; Colonel J. F. R. Hope, C.B.E., D.S.O., to be Aide-de-Camp to the King, in succession to Colonel (temporary Brigadier) G. M. Lindsay, C.M.G., D.S.O., promoted Major-General.

Lieutenant-General Sir W. H. Bartholomew, K.C.B., C.M.G., D.S.O., to be Colonel Commandant, Royal Artillery, in succession to Lieutenant-General Sir Edward A. Fanshawe, K.C.B., resigned; General Sir Alexander E. Wardrop, K.C.B., C.M.G., to be Colonel Commandant, Royal Horse Artillery, in succession to Lieutenant-General Sir Edward A. Fanshawe, K.C.B.

Major-General C. C. Luard, C.B., C.M.G., to be Colonel of the Durham Light Infantry, in succession to General Sir H. de Beauvoir De Lisle, K.C.B., K.C.M.G., D.S.O.

Colonel F. H. Dorling, D.S.O., to be Colonel of The Manchester Regiment, in succession to the late Colonel (honorary Brigadier-General) W. K. Evans, C.M.G., D.S.O.

Major-General A. P. Wavell, C.M.G., M.C., to be Commander, 2nd Division, in succession to Major-General H. C. Jackson, C.B., C.M.G., D.S.O., on expiry of his appointment; Major-General R. G. Finlayson, C.B., C.M.G., D.S.O., to be Commander, 3rd Division, in succession to Lieutenant-General W. W. Pitt-Taylor, C.B., C.M.G., D.S.O.; Major-General J. K. Dick-Cunyngham, C.B., C.M.G., D.S.O., to be Commander, 4th Division, in succession to Major-General J. E. S. Brind, C.B., C.M.G., D.S.O.; Major-General B. N. Sergison-Brooke, C.M.G., D.S.O., to be General Officer Commanding, London District, with effect from about January, 1935, in succession to Lieutenant-General C. J. C. Grant, C.B., D.S.O.; Major-General B. B. Crozier, C.B., C.M.G., D.S.O., to be Commander, 43rd (Wessex) Division, Territorial Army, in succession to Major-General R. J. T. Hildyard, C.B., C.M.G., D.S.O., promoted Lieutenant-General; Major General G. Thorpe, C.B., C.M.G., D.S.O., has been appointed Commander of the 53rd (Welsh) Division, Territorial Army, with effect from May next, in succession to Major-General J. K. Dick-Cunyngham, C.B., C.M.G., D.S.O., who, as already announced, has been appointed Commander of the 4th Division; Major-General R. M. Luckock, C.B., C.M.G., D.S.O., to be Commander, 54th (East Anglian) Division, Territorial Army, in succession to Major-General F. J. Marshall, C.B., C.M.G., D.S.O., on expiry of his appointment.

Major-General F. W. Barron, O.B.E., to be Inspector of Fixed Defences; Major-General G. C. Williams, C.M.G., D.S.O., to be Commandant, Staff College, Quetta,

in succession to Major-General R. C. Wilson, C.B., D.S.O., M.C.; Major-General R. H. Haining, D.S.O., *p.s.c.*, to be Commandant, Imperial Defence College, with effect from January, 1935.

Lieutenant-General W. W. Pitt-Taylor, C.B., C.M.G., D.S.O., to be Lieutenant of the Tower of London, with effect from March, 1935, in succession to Lieutenant-General H. H. S. Knox, C.B., D.S.O., who will then assume the appointment of Adjutant-General to the Forces.

Lieutenant-General Sir George S. Clive, K.C.B., C.M.G., D.S.O., on retirement, to become Marshal of the Diplomatic Corps.

The following promotions have been made :—

Lieutenant-General Sir Felix F. Ready, K.C.B., C.S.I., C.M.G., D.S.O., to be General.

Major-General R. J. T. Hildyard, C.B., C.M.G., D.S.O.; Major-General Sir Reginald S. May, K.B.E., C.B., C.M.G., D.S.O.; Major-General C. J. C. Grant, C.B., D.S.O.; to be Lieutenant-Generals.

Colonel A. C. Temperley, C.B., C.M.G., D.S.O.; Colonel W. N. Herbert, C.M.G., D.S.O.; Colonel W. D. S. Brownrigg, D.S.O.; Colonel B. C. Freyberg, V.C., C.M.G., D.S.O., LL.D.; Colonel J. M. R. Harrison, D.S.O.; Colonel R. H. D. Thompson, C.M.G., D.S.O.; Colonel F. W. Barron, O.B.E.; Colonel C. G. Kelly, D.S.O.; Colonel S. S. Butler, C.M.G., D.S.O.; Colonel G. M. Lindsay, C.M.G., D.S.O.; Colonel H. W. M. Watson, C.M.G., D.S.O.; Colonel R. H. Haining, D.S.O.; Colonel J. H. Marshall-Cornwall, C.B.E., D.S.O., M.C.; Colonel C. B. D. Strettell, I.A., to be Major-Generals.

PROMOTION OF ARMY OFFICERS.

SPECIAL MEASURES FOR INFANTRY OF THE LINE.—It has been announced in the House of Commons that certain exceptional measures have been decided upon to remedy the block in the promotion of officers at present existing in the Infantry of the Line. The most important of these measures, which are the result of the recommendations of a special committee set up under the Chairmanship of the Rt. Hon. the Earl Stanhope, when Under Secretary of State for War, are as follows :—

Promotions have been made to the ranks of Major-General, Lieutenant-General and General, in the place of General Officers who had retired prematurely, but whose places in the establishment of General Officers have remained temporarily unfilled. Certain reductions in the establishments of General Officers will, however, be effected over a period, but the net result at the moment is to make some seven promotions in these ranks at once. This abolition of the so-called "ghost" system will result in an increasing number of promotions throughout the lower ranks.

A number of officers of the rank of major or below whose commissions bear a date before 1st January, 1919, will be offered special terms as regards retired pay or retiring gratuities. If sufficient volunteers are not forthcoming, it may be necessary to select additional officers for retirement on the same special terms.

It is further proposed to exercise a greater degree of selection as regards the promotion of officers from major to lieutenant-colonel. Majors will not be allowed to continue serving beyond three years in the rank unless they are considered fit to assume command, but no such officer will be placed on half-pay until he has attained the age of 45.

The position as regards promotion in certain Arms other than Infantry of the Line is also being examined, but it is not possible at present to state whether any special steps will be necessary in their case.

It is hoped that these measures will enable the flow of promotion throughout the Army to resume its normal course. In making its recommendations the Committee endeavoured to distribute the burden of premature retirements over the various ranks and to secure that any particular rank should not be called upon to make an unduly large sacrifice.

The special terms which will be offered to officers to retire are being announced to the Army, and so far as can be foreseen at present some 150 officers, and possibly more, may be allowed to retire on these terms. It is anticipated that the bulk of these retirements will be carried out by an early date in April, 1935.

PAY OF ARMY OFFICERS.

A Royal Warrant published in an Army Order issued on 30th August, 1934, contains new provisions in regard to the rates of pay of Army officers.

At present the standard rates of full pay, half-pay and retired pay of officers which were introduced from 1st July, 1919, are liable to revision in relation to variations in the cost of living, and the current rates in issue, which have been in operation since 1st July last, represent a reduction of 10 per cent. from the standard rates.

The Government have decided (as already announced in the case of Civil Servants) that, where remuneration of Crown servants has hitherto varied with changes in the cost of living, such remuneration shall now be consolidated. The Royal Warrant published yesterday lays down accordingly stabilized and consolidated rates of full pay and half-pay for Army officers corresponding to a cost-of-living index figure of 55 (the same as for Civil Servants), which gives a reduction of 9½ per cent. from the standard rates. The retired pay of officers is similarly stabilized and consolidated.

The rates of pay and half-pay of junior officers commissioned before 26th October, 1925 (1st February, 1926, in the case of Chaplains), and of pay of officers holding appointments for which pay at £6 a day or higher is provided, have not been subject to variation since 1st October, 1931, when the rates in issue on 30th September, 1931, were subjected to a special reduction on account of the financial emergency, one-half of which was restored from 1st July last. The stabilized and consolidated rates for these officers, included in the Royal Warrant, represent a reduction of 9½ per cent. from the standard rates applicable before 1st October, 1931.

The new rates in all cases are permanently fixed and will not be subject to variation, but until the state of the national finances permits, officers will continue to receive pay, half-pay and retired pay at the present rates.

An Order by the King, published in a further Army Order, makes similar provision for officers of the Territorial Army and retired officers appointed to the Staff of, or as Adjutants in, the Territorial Army.

ORGANIZATION AND NOMENCLATURE.

ROYAL ARTILLERY.—H.M. the King has approved of the formation, at Blackdown, of the 13th Anti-Aircraft Battery, Royal Artillery, for service in Malta. This unit was formed on 7th August and brigaded with 4th Heavy Brigade, Royal

Artillery. Also of the formation, at Shoburness, of the 7th Heavy Battery, Royal Artillery, for service in Malaya.

ROYAL CORPS OF SIGNALS.—H.M. the King has approved of the formation of No. 6 Tank Signal Section, Royal Corps of Signals.

MEDALS.

INDIAN GENERAL SERVICE MEDAL.—H.M. the King has approved that the "India General Service Medal, 1908," in silver, shall be granted, with clasp "Mohmand, 1933," to the forces which were employed in the operation against the Upper Mohmands on the North-West Frontier of India during 1933.

The medal, with the clasp "Mohmand, 1933," will be granted to all officers and men who served on the strength of a unit or formation of the Mohmand Force, and certain personnel of the Peshawar District who served in the area West of the road Abazai-Shabkadar Fort-Shabkadar-Pir Kala-Michni, between the Swat and Kabul Rivers, inclusive of the above-mentioned places, during the period 28th July, 1933, and 3rd October, 1933, both dates inclusive.

Individuals already in possession of the India General Service Medal, 1908, will receive the clasp only.

CENTRE BADGES.

The new centre badge for the Regimental Colours of the East Surrey Regiment is as follows:—An eight-pointed star and a lion, couchant, gardant, in front of a castle, the centre tower being charged with an escutcheon of the arms of Kingston-upon-Thames.

The Royal Berkshire Regiment is to have a stag under an oak tree as its new centre badge.

THE JUDGE ADVOCATE-GENERAL.

The retirement of Sir Felix Cassel, K.C., from the post of Judge Advocate-General has been followed by the appointment to that post of Colonel Sir Henry Foster MacGeagh, K.C.

REVOLVERS.

Consequent on the re-armament of the Regular Army with the pistol revolver, No. 2 (.38-in.), officers of the Regular Army Reserve of Officers are invited by the War Office to return the service revolver which at present forms part of their equipment to the Royal Army Ordnance Depot nearest to their place of residence, or to the Chief Ordnance Officer, Royal Arsenal, Woolwich, London, S.E.18. Weapons may be handed in personally or sent by post, and in the latter case postage need not be prepaid. Compensation cannot be given for any weapons returned, and the property in the revolver will pass to the War Department; in the event of any officer being called up for service he will be provided with a pistol revolver, from public equipment, free of cost.

TERRITORIAL ARMY

The latest official returns show that during the month of August, 1934, 513 recruits were finally approved for the Territorial Army. This is a decrease of 1,423 recruits compared with the number approved in July last, and is 102 recruits less than in August, 1933.

The total strength of the Territorial Army (other ranks) on 1st September, 1934, was 126,057; this is 667 less than on 1st August, 1934, and a decrease of 1,978 compared with the strength on 1st September, 1933.

The strengths of the 14 Infantry Divisions on 1st September, 1934, were as follows (the corresponding figures on 1st August being shown in brackets):—51st (Highland) Division, 8,505 (8,582); 50th (Northumbrian) Division, 8,433 (8,500); 53rd (Welsh) Division, 8,222 (8,141); 42nd (East Lancashire) Division, 7,903 (7,962); 46th (North Midland) Division, 7,692 (7,718); 43rd (Wessex) Division, 7,585 (7,629); 49th (West Riding) Division, 7,662 (7,710); 55th (West Lancashire) Division, 7,357 (7,421); 44th (Home Counties) Division, 7,084 (7,138); 48th (South Midland) Division, 7,099 (7,137); 52nd (Lowland) Division, 7,046 (7,098); 54th (East Anglian) Division, 6,758 (6,807); 56th (1st London) Division, 5,821 (5,862); and 47th (2nd London) Division, 5,305 (5,322).

The number of officers of the Territorial Army on 1st September, 1934, was 7,105; this is a decrease of 33 during the month, and the number is 1,007 short of establishment.

DOMINION FORCES

REGIMENTAL ALLIANCES.—H.M. the King has approved of the following regimental alliances:—

The Sherbrooke Regiment, Non-Permanent Active Militia of Canada, to The Leicestershire Regiment; 46th Battalion, Australian Military Forces, to The Duke of Cornwall's Light Infantry.

INDIAN ARMY

RETRENCHMENT OF OFFICERS.—The Secretary of State for India in Council has sanctioned the Government of India's proposals for dealing with the congestion now arising among officers of the higher and middle ranks of the India Army as a result of over-recruitment during the War. The congestion, if allowed to continue, would lead to a serious block in the senior ranks, and would upset the necessary proportion between the different ranks for many years to come. This would not only raise the cost of the officer cadre as a whole considerably above the normal figure, but would be contrary to the interests of the Service.

The proposals are as follows:—

(1) The tenure of command of all lieutenant-colonels appointed from 1st January, 1935, to the command of regiments of cavalry or battalions of infantry or to equivalent appointments will be limited to three years. During this tenure no furlough will be admissible to them. On its completion they will, if not promoted or given further employment, be transferred to a special list and granted one year's combined leave pending retirement, which will count for all elements of pension.

(2) Officers for whom commands or equivalent appointments cannot be found when they complete 26 years' service and attain the rank of lieutenant-colonel will be granted combined leave up to one year, which will also count for all elements of pension. They will then be placed on the retired list with the pension to which they are entitled by rule, subject to a minimum of £700 a year. These pensions will be subject in the same manner as ordinary pensions to the current cost of living reduction while the present system of variation is maintained.

(3) Proposals (1) and (2) will, in course of time, considerably ease the congestion in the years of the War block. It will, however, still be necessary to retrench

compulsorily during the next six years a number of officers not exceeding 400 from that block—that is, from among those whose first commissions date between 4th August, 1914, and 31st December, 1920, both dates inclusive. The first retrenchments under the terms set forth below will take effect from 9th September, 1935; the numbers to be selected for retrenchment from each of the six years will be decided from time to time by the Commander-in-Chief.

(4) Officers so selected will be placed on a special unemployed list, where they will remain until they attain the age of 50 or complete 28 years' service, whichever is later, provided that no officer will be allowed to remain on this list beyond the normal superannuation age of 55 years. They will then be admitted to pension.

(5) While on the unemployed list officers will draw unemployed pay at a special yearly rate of £400. To this will be added, as applicable, £60 marriage allowance, £40 for one child, and £25 each for a second and third child. Officers on the special unemployed list will not be promoted. While on the special unemployed list they will be liable to recall in the event of general mobilization in India.

Officers will be required to pay the subscriptions and donations to the Family Pension Funds prescribed in Regulations, but the Government will refund half the monthly subscriptions so payable.

(6) On admission to pension they will be entitled to the gross pension, up to a maximum of £640 per annum, which they would have earned under ordinary rules had they remained on the active list and received promotion at normal periods. These pensions will be subject in the same manner as ordinary pensions to the current cost of living reduction while the present system of variation is maintained. It will be permissible for officers to volunteer to take these terms, but applications will not necessarily be accepted.

FOREIGN

CHINA

OFFICERS' TRAINING REGIMENT.—In an attempt to introduce a common standard of training throughout the armies of the various provincial governments, Chiang Kai-shek has instituted a Military Officers' Training Corps. This establishment was due to open on 1st July at Lushan in Honan province. Chiang Kai-shek himself is Colonel of the Training Corps, which will be divided into three battalions, each commanded by an Army Commander (General). The students will consist of brigade, regimental and battalion commanders and seconds in command, chiefs of staff of divisions and brigades, and staff officers down to the rank of major. They will be organized into three classes, each class receiving one month's training. No details have been announced as to the qualifications or method of selection of the instructors.

FRANCE

TRAINING OF ARMY OFFICERS AS OBSERVERS.—A recent decree gives details of the conditions under which officers may be attached to the Army of the Air as observers in aeroplanes or balloons.

Subject to physical fitness they carry out an initial course lasting four months, at the end of which they are required to pass a test to gain their observer's certificate.

If successful they then do a further attachment of one year, and subsequently an annual attachment of one month, with a squadron.

The preliminary four months' course is divided into:—

- (a) Three months at the training school at Avord.
- (b) Three weeks at the aerial gunnery and bombing school at Cazaux.
- (c) One week devoted to examinations and tests.

During their year's attachment officers must be employed in active flying with army co-operation squadrons and, if they show particular aptitude, may be allowed to continue for another year. The possession of an observer's certificate will entitle an officer to reckon nine months' increase in service in qualifying for a pension and to other benefits. All *p.s.c.* officers of the General Staff after leaving the Staff College are required to carry out a two months' attachment to the training school at Avord and obtain their observer's certificate, followed by voluntary attachments lasting two weeks whenever practicable.

Officers can also volunteer to qualify as observers in balloons. To qualify for their certificate they are required to carry out the following attachments—

- (a) An initial course of seven weeks at the *École militaire d'application de l'armée de l'air*.
- (b) A specialist's course of one month's duration with a balloon unit.
- (c) An annual course of one month.

Officers who obtain a certificate, will receive similar benefits, but on a lower scale, in the matter of pensions, etc., as for the aeroplane observers.

RUMANIA

INTRODUCTION OF PRE-MILITARY TRAINING.—A law has recently been passed, to take effect from 1st November, 1934, whereby pre-military training will become compulsory in Rumania for all youths between the ages of 18 and 20 years inclusive.

The law contains in 24 Articles, the most important of which are as follows:—

Article 1 defines the scope of the law as "Moral and national training to produce order and discipline. Physical training. Elementary military instruction to permit of rapid progress being made when individuals are subsequently called to the Colours."

Article 2 allows for certain exemptions, or postponements due to ill-health or other reasons.

Article 3 lays down the obligatory annual training as 50-60 parades plus 4-7 days camp.

Article 4 lays down that the Minister of National Defence will direct the training, working through the General Staff, and the Inspector-General of territorial commands.

Articles 7 to 9 explain the chain of responsibility for training from the Ministry of National Defence, down to actual district or municipal training centres.

Article 10 lays down that the instructional staff shall be—

- (a) Active officers, or ex-active officers incapacitated through service.
- (b) Reserve officers.
- (c) Other ranks from the reserve.

Article 13 lays down that the cost will be met from the Army Budget, augmented by obligatory subscriptions from districts and municipalities.

Article 15 authorizes ground belonging to the Army to be utilized for parades, etc.

Article 16 lays down that youths undergoing pre-military training will wear distinguishing badges. Instructors will, in addition, wear badges of rank.

Article 17 and 19 deal with recording and analyzing results.

Article 18 authorizes reduction in the subsequent period of service of from 3 to 6 months, and a reduction in the qualification periods for promotion to non-commissioned rank by one half, for those who have completed their pre-military training satisfactorily.

Article 20 lays down the punishments for those not showing zeal, or displaying indiscipline during their pre-military instruction. These include, amongst other punishments, the forfeiture of all leave during subsequent military service.

Article 21 lays down certain advantages which will be granted to Officer and N.C.O. instructors at pre-military training centres.

SPAIN

REORGANIZATION OF THE CENTRAL GENERAL STAFF.—The Spanish War Office is divided into :—

- (a) The Minister's Military Secretariat.
- (b) The Department of the Under-Secretary, which is responsible for personnel, material, medical and veterinary services and finance.
- (c) The Central General Staff, which is divided into sections for :—Organization and Mobilization ; Intelligence and History ; Instruction and Recruiting ; Operations ; Supply Services ; Survey ; Inspection of Naval Bases.

A recent law provides for the reorganization of the last-named into a Secretariat and two main departments (*agrupaciones*) each under a *General de Brigada*, one of whom will, in addition, carry out the duties of sub-chief in the Central General Staff. The commander of the first department will also act as "secretary" of the Centre of Higher Military Studies (Senior Officer's School).

No details have yet been published of the allotment of duties between the two main departments.

REORGANIZATION OF THE ARMY.—New establishments both for the Peninsula Army and for Morocco which came into force on 1st July, 1934, show that certain reorganizations and reductions in personnel have taken place.

The following are the most important changes :—

(1) The Air Service will henceforth come under the Presidency of the Council of Ministers whose budget will, in future, include air service expenditure. Air Service personnel are in consequence no longer included in army establishments, which fact must be borne in mind in considering the reduction in personnel in the new establishments.

(2) The Peninsula Army has been reduced by approximately 550 officers and 7,000 other ranks. Animals are reduced by about 2,000. Of these figures over

500 officers and 4,147 other ranks are accounted for by the separation of the Air Service, the remaining reductions being shared amongst all arms. The new total establishment is 7,285 officers, 106,629 other ranks and 30,000 animals.

(3) The Army in Morocco has been reduced by 108 officers and 4,066 other ranks, and animals by 586. Of these figures 45 officers and 955 other ranks are accounted for by the separation of the Air Service, the remaining reductions being principally in infantry and artillery personnel. The new establishment is 1,404 officers (of whom 64 are natives), 32,116 other ranks (of whom 8,919 are natives) and 8,934 animals.

(4) The Foreign Legion (*Tercio*).—The two "legions" of which the *Tercio* is composed will in future be separate administrative units. They will be known as Legion No. 1 with H.Q. at Tauima in the Eastern District, and Legion No. 2 with H.Q. at Riffien in the Western District.

Each Legion consists of H.Q. and three battalions (*banderas*) each consisting of three rifle companies and one machine gun and close support weapon company. The latter consists of two sections of machine guns (eight guns in all) and one close support section of one gun and two mortars.

In order to ensure uniformity in the organization, administration and training of the two legions, an inspectorate is to be formed at Ceuta, which will consist of a colonel, assisted by two officers and 64 other ranks.

The total establishment of the *Tercio* is 157 officers, 4,326 other ranks and 767 animals, but it is believed to be about 1,000 below strength at the present time.

(5) The Automobile Service of Morocco.—Pending the formation of a Train Corps, all M.T. units and personnel have been formed into a separate service known as the *Servicio Automovilista de Marruecos*.

The service will be organized into H.Q. and two groups (Eastern and Western). Each group will consist of H.Q., a general transport company and a workshop company. The total establishment of the service is 27 officers and 736 other ranks.

AIR NOTES

ROYAL AIR FORCE

APPOINTMENTS.

AIR MARSHAL.—Sir E. R. Ludlow-Hewitt, K.C.B., C.M.G., D.S.O., M.C., to Air Ministry, Department of Chief of the Air Staff (D.O.I.), on promotion to the rank of Air Marshal, to date 1st July.

AIR VICE-MARSHAL.—R. P. Mills, C.B., M.C., A.F.C., to Air Ministry, Department of the Air Member for Personnel—temporarily appointed as Director of Postings, to date 20th August.

AIR COMMODORES.—O. T. Boyd, O.B.E., M.C., A.F.C., to Headquarters, Fighting Area, on promotion to the rank of Air Commodore, 1st July; E. L. Gossage, D.S.O., M.C., to Headquarters, R.A.F., Iraq, for duty as Senior Air Staff Officer, 1st September. B. E. Sutton, D.S.O., O.B.E., M.C., to No. 1 (Indian) Group, Headquarters, on promotion to the rank of Air Commodore, 1st July; A. W. Tedder, to Air Ministry, Department of Air Member for Personnel (D. of T.), on promotion to the rank of Air Commodore, 1st July; R. H. Verney, O.B.E., to Air Ministry, Department of the Air Member for Supply and Research (D.T.D.), 17th September.

GROUP CAPTAINS.—F. C. Cowtan, to Princess Mary's Royal Air Force Hospital, Halton, for duty as Commanding Officer, August 27th; W. A. S. Duck, O.B.E., to Air Ministry, Department of Air Member for Personnel (D.M.S.), for Medical Staff duties, 30th July; J. H. A. Landon, D.S.O., O.B.E., to Half-Pay List, 5th August; C. W. H. Pulford, O.B.E., A.F.C., to Air Armament School, to command, 1st October; N. C. Spratt, O.B.E., to Headquarters, Inland Area, on appointment as Senior Equipment Staff Officer, 5th August; H. E. Whittingham, C.B.E., to Central Medical Establishment, for duty as Commanding Officer, 5th August.

AIR ATTACHÉ, BERLIN.

Group Captain Francis Percival Don, O.B.E., succeeded Group Captain J. H. Herring, D.S.O., M.C., as Air Attaché, Berlin, as from 1st October.

RETIREMENTS.

Air Marshal Sir Robert Hamilton Clark-Hall, K.B.E., C.M.G., D.S.O., placed on Retired List, 11th August.

Air Commodore Francis Know Haskins, D.S.C., placed on Retired List at own request, 17th July.

Group Captain Joseph Ruscombe Wadham Smyth-Pigott, D.S.O., placed on Retired List at own request, 8th October.

OPENING OF THE ROYAL AIR FORCE COLLEGE.

The ceremony of opening the Royal Air Force College, Cranwell, was performed by His Royal Highness the Prince of Wales, K.G., on 11th October, in the main lecture hall of the College.

The Prince, who travelled by air to Cranwell, was received on the aerodrome by Lord Yarborough, Lord Lieutenant of Lincolnshire; Lord Londonderry, Secretary of State for Air; Sir Edward Ellington, Chief of the Air Staff; and Air Vice-Marshal W. G. S. Mitchell, Air Officer Commanding, R.A.F., Cranwell. Proceeding

to the new College buildings, the Prince inspected a guard of honour of Cadets, and was then conducted to the main lecture hall. On the platform the Prince was also supported by Marshal of the Royal Air Force Lord Trenchard, who was Chief of the Air Staff at the time the College was formed; Marshal of the Royal Air Force Sir John Salmond, who in the same office superintended its development; Air Vice-Marshal F. W. Bowhill, Air Member of Council for Personnel; Air Marshal Sir Hugh Dowding, Air Member of Council for Supply and Research; Sir Christopher Bullock, Secretary of the Air Ministry; and Air Marshal Sir H. Robert Brooke-Popham, Air Officer Commanding-in-Chief, Air Defence of Great Britain.

After the ceremony the Prince took lunch with the whole company in the dining-hall, and later made a tour of inspection of the buildings.

PERSONNEL.

R.A.F. STAFF COLLEGE.—In continuation of last quarter's Notes, the following officers have been nominated by their respective Dominion Air Boards to attend the R.A.F. Staff Course, 1935 :—

Royal Australian Air Force.—Flight Lieutenants W. E. Ewart and F. R. W. Scherger.

Royal Canadian Air Force.—Flight Lieutenants F. G. Wait and A. P. Campbell.

Royal New Zealand Air Force.—Flight Lieutenant A. de T. Nevill.

AWARD OF FLIGHT CADETSHIPS TO AIRCRAFT APPRENTICES.—Aircraft Apprentices V. C. Darling, J. R. Fishwick, and P. E. Warcup, from No. 1 School of Technical Training (Apprentices), Halton, have been selected for Cadetships at the Royal Air Force College, Cranwell, on the result of the examinations held on completion of their three years' training as aircraft apprentices.

LORD WAKEFIELD SCHOLARSHIPS.—The "Lord Wakefield" Scholarships, valued at £75 each, have been awarded to Flight Cadet J. R. Fishwick and to Flight Cadet J. H. Humphris, on the result of the recent competitive examination for entry into the Royal Air Force College.

PRIZE CADETSHIPS.—The Air Council have awarded Prize Cadetships to the following successful candidates at the examination held in June last for entry into the Royal Air Force College, Cranwell :—D. A. Kerr; R. P. M. Gibbs; W. I. C. Inness; C. R. Blount; J. B. Tait; A. M. K. Phillips.

ATTACHMENT OF FOREIGN OFFICERS.—The following attachments to R.A.F. units have recently been effected :—

Swedish Air Force.—Captain A. G. Ljungdahl, to School of Army Co-operation, Old Sarum, to undergo Army Co-operation course.

Persian Air Force.—Lieutenant Afkhami, to No. 25 (F) Squadron, Hawkinge.

Lithuanian Air Force.—Major Januskevicius, to No. 25 (F) Squadron, Hawkinge.

CONSOLIDATION OF PAY.

A.M.O. A.218/34 states that H.M. Government have decided that, with effect from 1st September, 1934, officers' pay, half-pay Scale A, service retired pay, and service element of disability retired pay shall be consolidated at rates corresponding to a cost of living index figure of 55, which represents a reduction of 9½ per cent. from standard rates. The present current rates will, however, continue in issue until the state of the national finances permits of the issue of the full consolidated rates.

ORGANIZATION.

The following organization or reorganization of units has taken place, or is due to take place :—

No. 65 (F) Squadron formed at Hornchurch on 1st August, 1934.

Nos. 600, 601, and 604 Squadrons were converted from bomber to fighter squadrons on 12th August, 12th August, and 23rd July, 1934, respectively.

Mildenhall was opened as a R.A.F. Station on 16th October, 1934, and placed under the command of A.O.C. Western Area. No. 99 (B) Squadron will move from Upper Heyford to Mildenhall by 14th November, 1934.

Digby was reopened as a R.A.F. Station on 1st October, 1934, and No. 2 Flying Training School reformed there on that date.

The first Course after reopening will commence on 5th November, 1934.

The R.A.F. aerodrome, Lee-on-the-Solent, will be brought into use with effect from 26th October, 1934. "A" and "B" Flights of the Base Training Squadron, R.A.F. Base, Gosport, will move to Lee-on-the-Solent on 26th October, 1934.

With effect from 29th October, 1934, the Flights at Lee-on-the-Solent will be renamed as follows :—

"A" Flight (Co-operation Flight)—combining "A" Flight (Landplanes) from Gosport, and the Co-operation Flight (Floatplanes) at Lee-on-the-Solent.

"B" Flight (Naval Observers' Training Flight)—renamed from Training Flight, School of Naval Co-operation, Lee-on-the-Solent.

"C" Flight (Telegraphist Air Gunners Training Flight)—renamed from "B" Flight, Gosport.

RE-EQUIPMENT OF UNITS.

The following re-equipment of units has recently taken place :—

<i>Unit.</i>				<i>Details.</i>	
No. 24 Squadron	..	..	..	Osprey replaced	IIIF. G.P.
" 41	"	..	..	Demon	" Bulldog.
" 801	"	..	..	Osprey	" Flycatcher.
" 802	"	..	..	Seal	" IIIF. F.A.A.
" 810	"	..	..	Baffin	" Dart.
" 403 Flight	..	..	..	Osprey	" Flycatcher.
" 406	"	..	..	Osprey	" Flycatcher.

The following units are expected to complete or commence re-equipment during the next few months :—

No. 8 Squadron	..	..	..	Vincent to replace	IIIF. G.P.
" 10	"	..	..	Heyford	" Virginia.
" 19	"	..	..	Gauntlet	" Bulldog IIA.
" 24	"	..	..	Hart	" Osprey.
" 30	"	..	..	Hardy	" Wapiti.
" 36	"	..	..	Vildebeest	" Horsley T.B.
" 84	"	..	..	Vincent	" Wapiti.
" 202	"	..	..	Scapa	" IIIF. F.A.A.
" 205	"	..	..	Singapore	" Southampton.
" 605	"	..	..	Hart	" Wapiti.
" 811	"	..	..	Baffin	" Ripon.
" 823	"	..	..	Seal	" IIIF. F.A.A.
" 824	"	..	..	Seal	" IIIF. F.A.A.

EXERCISE AND CRUISE.

MOVEMENTS EXERCISE.—Between the 6th and 25th of October, Nos. 2, 4, 13, and 23 Squadrons were engaged in a Movements Exercise, consisting of the transfer of the personnel, aircraft, and equipment of these squadrons to the Packing Depot, Sealand, and return. The object of the exercise was to give practice in the packing up of a squadron's equipment for a move from its home station to an overseas command. The control of large convoys of mechanical transport and their protection from air attack, both when on the move and when packed, was investigated.

Other units concerned with the supply of mechanical transport, the provision of special overseas equipment and additional aircraft, and the arrangement of camps for the squadrons on the line of march also participated in the exercise. In addition, the opportunity was taken to provide special training for a number of reservist drivers called up for their period of annual training.

CRUISE OF SINGAPORE III FLYING BOAT.—Under the command of Squadron Leader A. F. Lang, M.B.E., the Singapore III Flying Boat attached to No. 210 (F.B.) Squadron, left Calshot on the morning of 22nd September, on a cruise in the Mediterranean. The Rt. Hon. Sir Phillip Sassoon, Under-Secretary of State for Air, whose tour is reported elsewhere, travelled by this flying boat as far as Cairo, which was reached via Berre, Malta and Athens on the 26th September. Leaving Cairo on the 1st October, the flying boat proceeded to Alexandretta, Kesteloz (2/10/34), Athens (3/10/34), Brindisi, and Naples (4/10/34), Berre (8/10/34), and with a flight from Berre to Pembroke Dock completed the cruise on the 9th October, 1934.

OVERSEAS COMMANDS

TOUR OF THE UNDER SECRETARY OF STATE FOR AIR.—The Rt. Hon. Sir Phillip Sassoon, Under-Secretary of State for Air, left England on 22nd September, on an extended tour of R.A.F. Units in overseas commands.

Embarking at Calshot on the morning of the 22nd, in the new flying boat, Singapore III, he proceeded by way of Hourtin, Etang de Berre and Ajaccio to Malta, and thence via Athens to Aboukir, where he arrived on the 26th. At Aboukir he left the Singapore III flying boat, which proceeded on a tour of the Mediterranean, already referred to. Continuing in a Victoria aircraft, the U.-S. of S. reached Heliopolis on the same day, and on the 28th carried out a tour by air of the R.A.F. units at Ismailia and Abu Sueir. Proceeding by Victoria aircraft on 29th September, calls were made at Ramleh and Amman *en route* to Hinaidi, which was reached on the 30th. After an inspection of units at Hinaidi, Mosul, and Shaibah, he continued his tour by the regular Imperial Airways service from Shaibah on 3rd October, via Sharjah, Jodhpur, Calcutta, Rangoon, to Alor Star, which was reached on the 7th October. The final stage of the outward journey from Penang to Singapore via Kuala Lumpur was completed by service aircraft, Singapore being reached on the 8th October.

During his five days' stay at Singapore, the U.-S. of S. visited the R.A.F. Base and landing grounds, the Naval Base and local defences, and made a tour up the East Coast and round the neighbouring islands by flying boat. Leaving Singapore on the 14th October, he travelled by Imperial Airways to Delhi, where he was due to arrive on 16th October, and to continue by service aircraft to Lahore on the 17th, and Peshawar on the 18th. From this point visits to R.A.F. units at Kohat and Rasalpus were to be carried out by air, and on the 21st the return journey was to be resumed by service aircraft via Quetta to Karachi.

Sir Phillip was due to return at Croydon Airport on the 29th October.

CRUISE OF NO. 203 (F.B.) SQUADRON.—Three Rangoon flying boats of No. 203 (F.B.) Squadron, under the command of Group Captain R. E. Saul, D.F.C., left Basra on 5th September for Melbourne, to take part in the State of Victoria Centenary Celebrations. The route followed was via Bahrein, Ras-al-Khaimah and Gwadur to Karachi, from where the Squadron commenced, on 7th September, a flight of about 1,550 miles across the mainland of India via Udaipur, Allahabad and Chittagong, this being the first occasion on which a flight of this nature has been carried out by flying boats. Leaving Chittagong on the 12th, the Squadron proceeded down the coast to Akyab and Rangoon. Continuing on the 15th the Squadron reached Singapore via Mergui and Penang on the 17th. Proceeding via Batavia, Sourabaya, Bima, Koepang, Darwin, Millingimbi, Thursday Island, Cookstown, Brisbane and Sydney. Melbourne was reached on the 8th October, according to schedule, a distance of approximately 9,335 miles having been flown without untoward incident.

The return journey, on the same route as that followed on the outward flight, was due to commence on the 12th November, and after a stay of eight days at Singapore, the Squadron is due to arrive at Basra on the 20th December.

FOREIGN

BELGIUM

AIR EXERCISES.—For two nights, between the 5th and 14th September, when air defence exercises took place in the neighbourhood of Brussels, the city was in complete darkness and silence was imposed. During that period also the Red Cross, fire brigades, railways, telephonic and telegram services all co-operated. This organization, which was part of that destined to deal with poison gas attack, was considered satisfactory; but the observer system was stated to have been unduly slow in giving notice of the approach of hostile aircraft.

FRANCE

CIVIL ORGANIZATION IN AIR ATTACKS.—A Bill has been submitted to Parliament relating to what is described as "passive defence against air attack," seeking, in general terms, to deal with the juridical and financial aspects of this problem and to define the chain of responsibility.

The Minister of the Interior, assisted by a Committee of Passive Defence, is responsible for the direction, co-ordination and supervision of an obligatory national organization for passive defence. Plans will be made and their execution supervised by the following:

- (a) Ministers, who will be responsible for the protection of services and installations under their command.
- (b) Prefects, who will be responsible for their Departments, and Mayors for their Communes.
- (c) Firms and undertakings who, by reason of their possible participation in national defence, of their importance, or of any special conditions affecting their production, will be dealt with by the Ministry of the Interior, who will decide how they should ensure their protection against air attack.

The Minister of the Interior will be responsible for producing measures to reduce the vulnerability of public services, Communes, and private undertakings, by the adaptation of municipal projects, etc., to the requirements of passive defence.

Through his advice, Public Administrative Orders will be drawn up providing for the addition of supplementary civil establishments, composed of volunteers to departmental and municipal authorities.

In principle the cost of passive defence will be borne by those for whom it is organized, but in exceptional circumstances where such cost is very high the State will issue a grant. In the event of failure to fulfil their obligations by Departments, Communes, and other beneficiaries, the Minister of the Interior will decide by decree the minimum requirements necessary for the preparation of passive defence. These decisions will be obligatory. In the case of non-compliance within a specified time, the necessary work may be ordered by the Prefects, and carried out at the expense of those concerned.

Periodical manoeuvres are to be carried out and any person attempting to oppose them will be liable to punishment.

The extension of the law to cover the Colonies is provided for at the request of the Minister concerned.

The weakness in the legislation lies in the fact that parties who fail to fulfil their obligations may appeal against the decree enforcing them, and thereby gain a substantial respite pending a decision on their appeal.

A sum of 11,000,000 frs. was included in the 1934 Budget for the State participation in "passive defence."

AIR EXERCISES.—Exercises designed to test the air defences of Paris were carried out on 30th and 31st August. A Blue Force commanded by General Gerard attacked, and a Red Force commanded by General Marancourt defended. A corps of observers occupied four lines between the frontier and the city, equipped with sound detecting apparatus, balloons and wireless. An official statement issued after the exercises reported that the attackers largely attained their objective. In this they were aided by the low clouds which prevailed. So bad was the visibility at one time that one squadron flew entirely by instruments from Metz to Le Bourget, and having located their target returned by the same means.

ITALY

INCREASED EXPENDITURE.—It has been learnt that the Government of Italy intend to spend one milliard lire on the "renovation of her Air Force" spread over the next six years. This is presumed to refer to a sum supplemental to her normal annual vote. At the present rate of exchange one milliard lire would be equivalent to about £2,750,000 annually.

A DIRECTORATE OF SCHOOLS.—An official decree recently published in Rome authorizes the establishment of a Directorate of Schools in the Italian Air Ministry. Hitherto all "Training" matters have come under the control of one joint "Directorate of Personnel and Schools." This new decree appears to legislate for the divorce of "Training" from "Personnel" and the institution of a new Directorate controlling all types of training, *ab initio*, service flying, staff duties and specialist.

HIGH ALTITUDE FLYING SECTION.—Following the successful attack on the world's altitude record for aircraft, the Italian Government has authorized the institution of a "High Altitude Flying Section" as part of the organization of the experimental establishment at Montecelio, near Rome. The duties of this section are stated to be:

- (1) Preparation and training of personnel.
- (2) Preparation of aircraft especially constructed for high altitude flying.
- (3) Practical investigation of problems relative to the design and construction of special type aircraft for high altitude duties, aero engines and ignition, fuel, cooling systems, superchargers, lubricating mixtures, instruments, breathing apparatus, heated clothing, experiments with aircraft with hermetically closed cabins.
- (4) Experiments in regard to navigation in high altitudes.

It is reported that a special aircraft is in course of construction for high altitude flying, in which the fuselage and cabin are wholly encased and hermetically sealed.

ALTITUDE RECORD.—It is learnt that Donati, who recently won for Italy the world's altitude record for aircraft, hopes shortly to make an attempt to beat his own record (47,650 ft.).

HOME DEFENCE AIR EXERCISES.—Brief reports in the Press state that during air exercises carried out in Northern Italian industrial areas, "enemy bomber squadrons flying at a high altitude, succeeded in reaching their objectives, bombing certain selected targets, and returning to their base, being little hampered by the squadrons of fast fighters which formed the defence."

CENTRALIZATION OF CIVIL AIR LINES.—In February of this year it was announced by the Italian Air Ministry that all Italian civil air lines of national importance were to be operated as State aviation (coming under the Air Ministry) and controlled by one company. Minor lines would be left to private operators, without subsidy, but granting instead free use of air ports, hangars, W/T and meteorological services. The company which will absorb existing civil air lines is known as the Società Aerea Mediterranea or the "Sam," in which the Italian Government hold a controlling interest.

The Italian Press now announces that the Società Anonima Navigazione Aerea has been absorbed by the "Sam" as from 1st July, 1934, whilst arrangements for taking over the Società Italiana Servizi Aerea are nearing completion. The former operates Italian civil air lines in the Western Mediterranean and to the Italian North African colony, Libya, whilst the latter is concerned with those in the Northern Adriatic.

CHINESE MISSION.—A small Chinese Air Mission has arrived in Italy headed by the Assistant Commander of Chinese Military Aviation. Its object is to study the military and civil air organization of the country. Part of the mission will undergo advanced aeronautical training.

JAPAN

EXPANSION OF THE NAVAL AIR SERVICE.—As reported in last quarter's Notes, in order to provide pilots for the expansion of the Naval Air Service, the authorities have decided to obtain seaman pilots from the Navy and also to select a limited number from the long service boy ratings recently formed for service with the Naval Air Service. A new training establishment has been opened at Tomobe, 21 miles North-East of the present naval air training station at Kasumigaura, which was lately reported to be too congested for safety.

In addition to the station at Tomobe, the Navy have decided to establish four more naval air bases, one at Kisarazu near Tokyo, a second at Ochischi in the northern island, a third in the neighbourhood of Kagoshima in Western Japan, and one at Chinkai in Korea. It is not known when these bases will be completed.

AIR DEFENCE EXERCISES.—Air exercises were held in September in the area between Kyushu and the Shimonoseki Straits. These exercises are believed to have included the training of the civilian population in darkening their towns and providing a number of look-out posts to locate incoming aircraft. The Japanese appear to attach a good deal of importance to these exercises.

TRAINING OF UNIVERSITY STUDENTS.—A scheme has recently been introduced with the object of training university students for the Japanese Air Force Reserve, with the assistance of the Japanese Navy, who are lending them five Avro training aircraft. The Marine Section of the Japanese Students' Federation is preparing a course on flying for students which will extend over three years. Training will be carried out during holidays and week-ends only, and after a course of preliminary training higher instructions will be given at the Naval Flying Training School.

INCREASE OF THE ARMY'S AIR SERVICE.—There have been many indications in the Press, recently, that the Army intends to expand its Air Service. The *Japanese Advertiser* suggests that the War Office proposals contemplate the expenditure of £20,000,000 spread over the years 1935-36 to 1937-38. Another journal published a short article on the Army Estimates for 1935-36, in which the principal items of increase are stated to be the equipment and replenishment of air units, the provision of air defence equipment, and the renewal and increase of expenditure for supplementary training.

The last item is thought to refer to training in new armament for reservists and possibly others. It may, however, refer to the whole Army and not to the Army Air Force alone.

POLAND

NEW AIR LINE TO BERLIN.—On the 1st May regular air communication between Warsaw and Berlin, via Posen, was commenced. Daily flights are carried out, aircraft, personnel, etc., being provided by the Polish Air Lines "Lot," and the German "Lufthansa," under a "pool" agreement.

NEW SINGLE-SEATER FIGHTER.—The "P.Z.L. 24" S.S.F. machine, produced by the Polish Aircraft Works "Panstwowe Zaklady Lotnicze" of Warsaw, and fitted with a French "Gnome K.14" engine, has just completed its official tests, during which it is said to have attained a speed of 251 m.p.h. (404 km.p.h.) at 14,700 feet (4,500 metres).

PORTUGAL

NAVAL AIR SERVICE.—It is reported that the Portuguese Naval Air Service have purchased a further five American "fleet training" seaplanes. They already have five of these aircraft in service. The same report also states that a certain number of new aircraft is to be purchased for use on the new warships destined for Portuguese colonial stations. In all, £54,000 has been allotted for the modernization of equipment in the Naval Air Service.

RUMANIA

NEW FIGHTERS.—It is announced that the French firm of Breguet has received from the Rumanian Government an order for twenty Breguet 414 aircraft. They are multi-seater, twin-engined fighters and will be fitted with Gnome-Rhône K.14 engines.

SOVIET UNION

AMERICAN OFFICERS AS INSTRUCTORS.—According to the German Press, thirty-two American officers are to be engaged as instructors to the Russian Air Force.

SPAIN

ESTIMATES FOR 1934.—A sum of 70 million pesetas was allotted to aviation in 1934. This represents approximately £2,000,000 at the present rate of exchange and is an increase of £750,000 over that for 1933. The Vote is made up as follows:

Military Air Service	£	1,277,000
Naval Air Service		450,000
Civil Aviation		139,000

IFNI AS AN AIR BASE.

The Spanish military occupation of Ifni in April last, although it was effected pacifically, is a matter not without interest.

Ifni is an enclave in the French Zone of Morocco, some hundred miles South of Agadir, and forms a rectangle of about the same size as the Grand Canary. It was ceded to Spain in 1860 and, although technically administered by Spain since that date, it had never been occupied until 9th April of this year. In announcing the occupation, the President of the Spanish Republic explained that the territory would prove to be an important asset to Spain from the international standpoint, as it lay on the air route from Europe to South America, via Dakar. An additional advantage lay in the fact that the Trans-Saharan railway would eventually pass through Ifni.

UNITED STATES

ARMY AIR CORPS MAIL OPERATIONS.—Following upon the cancellation of the air mail contracts in February last, it fell to the Army Air Corps to organize an emergency service to maintain the continuance of air mail facilities. For this purpose the country was divided into two zones, the Eastern and Western zones respectively.

The Eastern Zone.—Headquarters were established at Langley Field, Virginia, and here were collected together a large number of aircraft of varying types, drawn from various Air Corps stations on the eastern side of the U.S.A. This mobilization was effected between 10th and 16th February, and the aircraft were equipped with blind flying instruments. Seventy-two Army pilots were assigned to this command, and on arrival each was given a blind flying test and then despatched to some point within the operating area, for practice flights over the routes to be flown. Actual flying of the mail commenced on 18th February.

In the early stages of these operations, abnormally bad weather conditions prevailed, and casualties were suffered. The casualties included five deaths, five parachute jumps and thirty-eight forced landings.

The Western Zone.—A few details have been received on the operations in the Western Zone. Here eighty aircraft were hurriedly assembled, and the first mail flight took place on 17th February. Between that date and 16th May, more than 300,000 lb. of mail was carried, and the total distance flown on mail routes was approximately 615,000 miles. In the course of a test flight over the trans-continental route, several records were set up.

REVIEWS OF BOOKS

GENERAL

The Naval Memoirs of Admiral of the Fleet Sir Roger Keyes, 1910-1915. (Thornton Butterworth). 21s.

These Memoirs are absorbing, not only because they throw fresh light on important events of the War but because they are animated by the author's own vigorous personality and outlook. He states his facts concisely and authoritatively; he pays high—but not exaggerated—tribute to many heroic deeds which have become somewhat overshadowed by the wealth of detail in official histories; and he does not hesitate to point the lessons of mistakes or the dire results of inactivity—yet without undue bitterness.

The opening chapters deal with the years just before the War, when Captain Keyes made his first acquaintance with the submarine branch of the Navy. It is evident that he was not slow to realize the potentialities of this new form of warfare; yet he is generous enough to quote "an amateur naval expert," Mr. Alan Burgoyne, as an even earlier prophet. Mr. Burgoyne, in a lecture in the Royal United Service Institution in 1904, advocated the development of submarines of 600 to 800 tons. He was over-whelmed with ridicule by Captain R. H. Bacon, R.N., the Inspecting Captain of Submarines; but the conception of the amateur was justified.

The outbreak of the War found Commodore Keyes in charge of the Submarine Service, and his command was soon taking an active part in the operations in the narrow waters of the North Sea. His letters and notes written at the time show that he did not fail to appreciate and to warn the higher authorities of the new conditions which under-water craft had produced. One notable disaster might have been prevented had the Naval Staff in Whitehall listened to his advice. On 6th August he recorded in his diary, "the 'Bacchante' squadron . . . ought to be removed from such an exposed position"; on 21st August he wrote to the Director of Operations, "for Heaven's sake take those 'Bacchantes' away"; on 17th September he and Commodore Tyrwhitt, while attending a conference in the Grand Fleet flagship at which the First Lord and Chief of Staff were present, again represented the danger of exposing these old ships in such an advanced position. Their views were accepted, and at last it was decided to withdraw the squadron; but action was delayed, and on 21st September the "Hogue," "Cressy" and "Aboukir" were all sunk by a single enemy submarine.

Early in October, 1914, the author visited Zeebrugge while it was still in the allies' hands. It is curious that a, not unbiased, critic in years to come should complain that the great attack on that harbour was entrusted to a commander without local experience, for it is evident that the future Admiral of the Dover Patrol made very good use of this visit, and that when the operation was being planned he was one of the few Flag Officers who had thoroughly explored the mole and the canal entrance, and was, therefore, exceptionally well qualified to lead the attack.

Lord Fisher's arrival at the Admiralty was the signal for many changes. Keyes,

far from having been in "the fish pond," had had the temerity to speak his mind somewhat clearly to the great man a few years before; and for some time he expected to be removed from his command at any moment. Nevertheless, he held his own so well in a somewhat pointed exchange of letters that Fisher appears to have altered his attitude and taken a liking to him; it is clear that, although the views of the two men were to clash violently at a later stage, the author has retained his admiration for the veteran Admiral, with his "wonderful drive." But a curious mistake led Fisher to believe that Keyes was one of those who had failed in connection with the Dogger Bank action; this was very far from being the case, but the Commodore felt that the old enmity had returned and that it prejudiced the work of his command. The First Lord, Mr. Winston Churchill, to whom he represented the position, agreed that a change would relieve the situation, and at a day's notice Keyes was sent out as Chief of Staff for the momentous operations of the Dardanelles.

The story of that unfortunate campaign has been told many times and in many ways, but this, the latest account, excels in its clarity, honesty and humanity. Sir Roger has never faltered from his view that the Straits could have been forced by the ships, and that their arrival off Constantinople would have changed the whole course of the War, and probably led to an early victory for the Allies. Hitherto the weight of opinion has, probably, been against him. In the light of what we know now of the Turk's condition, and in view of this new and clear appreciation of the situation as it really was, many will now believe that, when sufficient military forces were available to occupy, not capture, the Peninsula, the attempt ought to have been made, and that there was a good chance that it would have been successful. There will still be those who will assert that, even so, this is being "wise after the event"; but the reader of these memoirs is likely to have his preconceived views considerably modified by them, and, maybe, to the extent of agreeing that the naval Chief of Staff was right all through. At any rate no one can fail to be impressed with the pertinacity with which, up to the bitter end, Keyes continued to press for the courageous course to be adopted. Alas! hesitation, procrastination, divided counsels, politics, and personalities all combined to make confusion worse confounded, and to bring about the final evacuation—brilliant in execution but humiliating as a climax to so much gallantry and so many sacrifices.

But this part of the book should be read, not once but many times, by every officer in His Majesty's Services, for it teems with lessons—lessons in the higher conduct of war, in the need for clear thinking and careful planning, and in the importance of realizing the enemy's psychology as well as the strength of his military position. The Turk is an Oriental, and he was therefore particularly liable to be impressed by a bold use of force, even if he were not overwhelmingly defeated. At a later stage in the War something like the situation in the Dardanelles was reproduced in miniature in North Russia: heavy forts guarded a long, narrow waterway leading to Archangel; the allied forces were quite inadequate for extensive military operations, but the forts were silenced and the ships bluffed their way in. The Russian, too, is essentially oriental in character, and, the allies having arrived, the hostile element collapsed or disappeared, and they received a cordial welcome. It is not at all impossible that something of this kind would have happened if the fleet had forced its way into the Sea of Marmora and appeared off Constantinople with bands playing.

In conclusion, these Memoirs should be read because, above all, they breathe that spirit of high purpose and self-sacrifice which keeps alive our greatest traditions. We shall look forward to Admiral Keyes' next volume with keen anticipation.

Marlborough : His Life and Times. Vol. II. By W. S. Churchill. (G. G. Harrap & Co.). 25s.

In this second instalment of his biography of Marlborough Mr. Churchill has left behind the stormy seas of controversy through which he had to steer his first volume, and the waters he has now reached are in comparison smoothness itself. There may well be two opinions, despite Mr. Churchill's ardent advocacy, about Marlborough's behaviour in 1688, about his correspondence with the exiled Court at St. Germain, even about the Camaret Bay letter. But on the merits of the strategy which conceived the famous march to the Danube and on the careful attention to administrative detail with which it was executed there can be but one verdict, while even the most captious can pick few holes in the tactics which won the Schellenberg and Blenheim. The volume has benefited by this change of atmosphere : Mr. Churchill has virtually abandoned his Old Bailey methods of advocacy and does not spend so much time in gleefully pursuing the motes in the eyes of the previous biographers of the Duke. Possibly he writes with rather less zest and vigour now that he has only the Dutch Deputies and Marlborough's destructive colleagues and subordinates, like Louis of Baden and the Dutchman, Slangenberg, to denounce. He is happier when engaged in a controversy than in forcing an open door ; yet his description of the marches and manœuvres are vigorous, often quite graphic, while their value is enhanced by the mass of diagrams which illustrate them. Those depicting the move of the British to the Danube in 1704 are particularly ingenious and effective, and there is a dramatic touch in the "Dusk," "Darkness" and "Dawn" diagrams illustrating the skilful manœuvres which pierced the famous Lines of Brabant in 1705.

The main interest of this volume lies in seeing what new light the re-examination of the Blenheim papers has yielded, whether anything of major importance escaped Archdeacon Coxe or has since come to light. The Archdeacon emerges with credit from the test : he did not miss much, for though Mr. Churchill quotes from or reproduces many new letters, they supplement and confirm rather than correct the impressions already formed. Most of them are to Godolphin or to the Duchess, private letters, more candid, outspoken and unguarded than the more official letters : they reveal more of Marlborough's hopes and fears, show him not too happy about the situation between the Schellenberg and Blenheim because the Emperor will not produce the heavy guns needed for a siege ; finally they show how bitterly he resented the obstructions and insubordination which robbed him of brilliant chances of victory, twice at least in 1702, and even more strikingly on the Dyle in 1705, where, but for Slangenberg, he might have made the name of Waterloo famous and familiar 110 years earlier. But these things are not new and Mr. Churchill merely consolidates them effectively. What is less familiar is that the ill-health of which there are many complaints in later years, notably at Oudenarde, after Ramillies, and especially in 1711, was already a serious trouble in the earlier campaigns. There are many references to severe headaches, to attacks of fever, to his having to be bled, which considerably enhance the merits of what he accomplished despite this handicap. Mr. Churchill also throws new light on the unsatisfactory performances of Margrave Louis of Baden, to whom was mainly due the failure of Marlborough's brilliant plan for invading France by the Moselle in 1705. The Margrave is usually represented as of a different school of military thought from Marlborough and Eugene, systematic to slowness, almost to pedantry, as reluctant to risk pitched battles as they were anxious to bring them on.

Mr. Churchill also seeks to show (p. 358) that the idea that Marlborough and Louis of Baden agreed to command on alternate days is incorrect, and that this

arrangement between them merely extended to giving the "parole" (watchword). He fails to explain why in that case Hare, his chaplain, whose account "was perused by Marlborough," as Mr. Churchill himself points out (p. 373), uses the phrase, "It being the Duke's turn to command the next day."

Mr. Churchill is not altogether happy over Louis of Baden. He describes him as "a royalty," a term which he also applies, most incorrectly, to the Electors of Bavaria and Hanover; this would have greatly shocked that Imperial Court, which would only concede to the importunate Hohenzollern the title of "King in Prussia," even to secure an increased contingent of the sturdy troops of Brandenburg. But the Empire has Mr. Churchill beat. His map of Europe includes Hungary and Transylvania within its boundaries, while in a rather far-fetched parallel between the defection of Bavaria in 1702 and the adhesion of Turkey to the Central Powers in 1914 he speaks of Bavaria as severing the rest of the Confederacy from the Empire (p. 299), a phrase which betrays his failure to appreciate correctly not only the strategical situation, but the true relationship between the hereditary Hapsburg dominions and the Holy Roman Empire. But on the whole he has been much more successful in avoiding historical howlers. It is true that his Index contains the entries "*Royal Artillery*" and "*Royal Engineers, at Blenheim*," that he more than once (cf. p. 302) says "tactical" when he presumably means "strategical," and that when he says (p. 44), "England gained control—never since lost—of the Mediterranean," he is ignoring the war of 1778–1782 and our enforced evacuation of the Mediterranean in 1796. These may be trifles, but it seems a pity that Mr. Churchill but rarely identifies the British regiments engaged in the different operations. He only gives one order of battle, that for Blenheim, where, if he had liked to look into the matter more carefully, he might have rapped some of his predecessors quite sharply over the knuckles for a blunder most of them have committed. He does not solve the vexed problem of the part played by the third British infantry brigade at Blenheim, he will give no assistance to those who are trying to find out if their regiments helped to take Venlo or Liège. If he writes of Marlborough's life and times he virtually ignores Marlborough's army. Further, one does feel that Mr. Churchill has rather let his pen run away with him, and that in covering no more than four campaigns in this volume he has set himself an almost impossible task if he proposes to compress Ramillies, Oudenarde, Lille, Malplaquet, the fall of the Whigs and the Peace of Utrecht into only one more volume. One could have spared some of the space devoted to party politics in England, greatly as Mr. Churchill has evidently enjoyed describing the fortunes of the Occasional Conformity Bill, and his accounts of the campaigns, though longer, add nothing essential to the crisper and equally well-written descriptions in Mr. Taylor's "*Wars of Marlborough*," the work of a much sounder historian, with quite as good a grasp of military matters. With that unfinished effort, as Mr. Churchill himself says (p. 22), "no modern English work can compete."

The Cambridge Shorter History of India. Edited by H. H. Dodwell. (Cambridge University Press). 12s. 6d.

This is an admirably sound, clear and concise work which all who have the good of the Empire at heart will do well to read. The Second and Third parts, dealing with Mohammedan India and with the coming of the European are of the most value, showing, as they do, the fatuity of "Indian nationality" and the impossibility of patriotism from Hindus as a whole, owing to the layers of caste. We note that Timurlang the Tartar was really a Turk, and the term Moghul merely indicated an adventurer from the North converted to Islam. The Emperor Baber,

the first of the Moghuls, resented the expression. Albuquerque (1453-1515), the great Portuguese, was the first to realize that "an Empire founded on the sea alone cannot last" and devoted Portuguese energies merely to controlling the sea trade. Comparatively early the East India Company realized that its servants required to be statesmen as well as merchants, and, equally early, thanks to their wisdom, the British settlements swelled enormously by native traders desirous of security against the perpetual upheaval in the native states.

The military history of the Company is written by a man with a sound knowledge of soldiering, though there are errors in detail. Eyre Coote is justly credited with being too much concerned in gathering laurels for himself, much as might be expected from an offensive, cantankerous man of his type. The circumstances leading to the Mutiny are well shown. It is a fallacy that the Company was responsible for the Mutiny. The system of government, indeed, was far more suitable than that now existing. Even in 1833 Macaulay had stated, "Authority must not be vested in the Crown alone, for criticism becomes difficult. What we want is a body independent of the Government, and no more than independent—not a tool of the Treasury, not a tool of the Opposition. The Company is such a body." Curiously enough the following year, Macaulay, in introducing the fatuous educational system which has been the source of so much trouble in India, stated, "Indian in blood and colour, but English in tastes, opinions and morals," as though the leopard can change his spots. The Company, just before his demise, pointed out that "Any Crown Minister charged with the government of India would himself be unacquainted with India, and incapable of judging the solicitation of men equally ignorant with himself, or knowing sufficient to impose on those less informed, and, in any case liable to seek party objects rather than the good of the country." During the last forty years the accuracy of this statement has been abundantly proved. "In political reform, as in education, the results of British policy have been to raise the superstructure before the foundations have been laid."

The unpreparedness of India for the Great War was more due to the pre-War attitude of the home authorities than to India itself, for only petty overseas expeditions were expected. The Viceroy himself was more to blame than the military authorities.

The increasing practice of the Secretary of State dictating to the Viceroy is well illustrated, and we have the anachronism of Mr. Morley, described as one of the "intelligensia," in no way habituated to the governing of men, laying down the law to Lord Minto, a man bred and habituated to such government. Finally, we have the egregious Mr. Edwin Montagu actually declaring, in public, that the Governor-General was merely the Secretary of State's agent. To sum up, it is pointed out that "real political progress in India depends far less on political concessions than on raising of the average Indian capacity"—a dictum with which no sane man having a modicum of knowledge of India will venture to dispute.

Echoes of Old Wars. Compiled by Colonel C. Field, R.M.L.I. (Herbert Jenkins). 10s. 6d.

Personal and unofficial letters often contain more vivid accounts of battles by sea or by land than the deliberate and unemotional despatches that are drawn up after the event which they describe. Colonel Field has selected some sixty such unofficial descriptions and reproduced them in this volume. They are all taken from actual letters or narratives composed by junior officers, chaplains or doctors, as well as those written or related by bluejackets and private soldiers.

They make interesting reading, and many of them are as good subjects for study as very many of the more serious volumes of naval or military history. It has always been our contention that the personal and human element in war is insufficiently recognized in our text-books, that are all too full of dry "lessons"; their impersonal teaching becomes so formal and dogmatic that it eventually grows meaningless. What could be better reading than some of these tales selected by Colonel Field? Let us take at random the anonymous Lieutenant's account of the capture of "L'Orphée" and the "Foudroyant" (in 1758), or "an officer's" story of Minden (in 1759), or, again, Dr. Gibney's relation of Waterloo (1815). And these are but three out of thirty and more of these descriptions, that give an admirable insight into the mechanism of battle. Even if at the present day, when the form of war has changed so greatly, it is still by reading similar first-hand impressions, of past as well as of modern war, that official handbooks can be made to assume a far deeper meaning and offer a greater value to the reader. Colonel Field's selections range from the siege of Terouenne, in 1513, down to Inkerman, in 1854. He has—perhaps wisely—not gone beyond the latter date; but might he not have given us a few more tales from the Peninsular War—for instance, from Quarter-master-Sergeant Anton's remarkable autobiography? On the other hand, there would be little point in reproducing extracts from more familiar or more accessible publications. The scope for such a selection is, in fact, endless.

Captain William Hobson, First Governor of New Zealand. By Guy H. Scholefield. (Oxford University Press). 12s. 6d.

The early history of the young Dominion of New Zealand was stormy. In 1770 Captain Cook had hoisted the Union Jack over the islands, but for seventy years the British Government had declined to assume any real responsibility for these new acquisitions; in fact, it seemed inclined to wash its hands of all consequences of Cook's action. The French, who evinced some interest in the matter of these possessions, might perfectly well have occupied them; they thought of doing so in the XIXth century, but the moment had gone by. As a result of this mismanagement for many years the islands became the scene of much disorder, as the Maori tribes were by no means united, so that wars and feuds were not uncommon; European adventurers of every class arrived there; while the New Zealand Company, a mercantile association created to exploit the islands, had assumed a considerable measure of their control. It was among these difficult and conflicting interests that Captain William Hobson, R.N., arrived in 1839 to take up the position of Consul and Lieutenant-Governor. His first act was to negotiate the Treaty of Waitangi, whereby the Maoris accepted British sovereignty, and in return secured many rights and liberties, as well as territorial security.

Mr. Scholefield, after recounting Hobson's naval career from 1803 to 1839—a career which included some exciting adventures in the West Indies—shows the difficulties encountered by Hobson in the discharge of his office. That he was a genius is very far from being the case and his health had been badly undermined by tropical disease. But he was a fearless and honest man; and, more important still, he was clearly a great friend of the Maoris, full of desire to do justice to that remarkable people. It was this desire to keep in touch with the Maoris that led him in 1840 to found his new capital city, Auckland, in the North Island, virtually adjoining the districts most thickly populated by Maori tribes.

Apart from the Treaty and the foundation of Auckland, Hobson did not accomplish much during the two years of his tenure of office. It is on those two achieve-

ments alone that his reputation will abide, for ill health and misunderstandings with all other authorities and personalities in New Zealand did not give him much scope to show himself to be much beyond an honest man, fearless of the consequences of acts which he considered just and timely.

There are some well-chosen appendices, a map and an index.

NAVAL

Prince Louis of Battenberg. By Admiral Mark Kerr. (Longmans Green & Co.) 10s. 6d.

This is a welcome tribute to the services of one of our greatest Admirals of the last generation. The work of compiling it has obviously been a real labour of love for the author—Prince Louis' second-in-command for many years, and life-long admirer.

The early chapters describe the Navy as it was when social events and sight-seeing occupied far more time than they do now. They also show that the young Battenberg owed his rapid advancement to Captain's rank largely to patronage; nevertheless, there has seldom been a case where it was more thoroughly justified. That he was a born leader was shown by the successes achieved by his two independent commands, the cruiser "Cambrian" and the battleship "Implacable." No higher tribute could be paid to any Captain than that his relief should be able to write that he had found "the smartest, most efficient and happiest ship that I have ever seen."

With his promotion to flag rank, Prince Louis entered with zest into the reforms and re-organization which were to work such great changes in the Service during the early years of the present century. For the most part, he was in agreement with the driving genius of this campaign, Jacky Fisher; but when he did not agree, he did not fear to say so, and it is evident that he was instrumental in preventing some less desirable or less well thought-out projects from being furthered.

Prince Louis' influence in higher naval affairs can be seen working quietly but steadily all through his long service as a Flag Officer afloat. His first command—the Second Cruiser Squadron, left a lasting impression by its visit to the United States; while his flagship, H.M.S. "Drake," made a great name for herself in gunnery proficiency.

The outbreak of the War found him at the Admiralty as First Sea Lord. A letter describing the mobilization of the Fleet is interesting as showing how ideas of duty differ in the political world and in the Services. It is amazing that at such a critical period, we should read that "Ministers with their week-end holidays are incorrigible. Things looked pretty bad on Saturday, on which, at 6 p.m., the ultimatum expired. Asquith, Grey, Churchill, and all the rest left London. I sat here (Admiralty) all Sunday . . ."

It was Prince Louis who took it upon himself to countermand the orders for the dispersal of the Fleet at Portland, which had been mobilized for manœuvres. "when Ministers hurried back late that evening . . . we had the drawn sword in our hands"—thanks to the First Sea Lord.

It is a pity that Admiral Kerr has revived the controversy about the Coronel disaster, and tried to defend the inexcusable disposition of our ships in the South Atlantic and the orders sent to Admiral Cradock, by claiming that the "Canopus" was a reinforcement of value if only the cruisers had kept with her. That fallacy

has been exploded again and again. The author is wrong in saying that the "Canopus" 12-inch guns could out-range the guns of the enemy cruisers—the reverse was the case; moreover, this so-called first-class battleship had no better armour than the ill-fated "Good Hope," she was manned largely by a reserve crew, and her gunnery efficiency and steaming capabilities were of a very low order. To say that the united squadron "would have inflicted a defeat on von Spee's squadron" in the Straits of Magellan, or anywhere else, is to betray the same lack of study of the essentials for victory at sea under modern conditions as was apparent in those who sent Cradock and his ships to their doom. Prince Louis was singularly unfortunate in the advice he received from certain of the more active members of his Naval Staff at this time: it is better to leave it at that.

The concluding chapters are full of bitterness against Prince Louis' traducers who, it is maintained, brought about his resignation within three months of the outbreak of war. But it was almost unavoidable that at such a time there should be criticism against retaining in his high office an individual of enemy origin. He could not help feeling that the position was one which would ultimately cause the Government and his colleagues some embarrassment, and that it might even operate against the highest interests of the Service. All who knew him realized how utterly unfounded was any such criticism, and one prefers to forget the causes which terminated this brilliant career, and rather to dwell on the quiet dignity with which Prince Louis performed his last great service of self-sacrifice for the sake of the Navy which never ceased to love and trust him.

On The Bridge. By Captain J. A. G. Troup, R.N. (Rich & Cowan, Ltd.) 7s. 6d.

This most practical work contains a wealth of useful notes on the Captain's duties and responsibilities in handling his ship. Much of it we were taught as Sub-lieutenants in our pilotage and navigational courses, but may have forgotten until, at a much later stage, we had to put it into practice. Much more is just a collection of the many and varied problems which confront us when "On the Bridge" and of the solutions to them which experience suggests. Fog, making land, getting the "feel" of a new command, securing to buoys and alongside, fleet work, and manœuvring in narrow waters are some of the subjects dealt with in straightforward and seamanlike language. A last chapter is devoted to the intricacies of Malta Harbour, which for generations has been the scene of some of the most masterly handling of H.M. ships by their own Captains.

The book has some admirably clear charts and diagrams to illustrate important points. It should find a place on the cabin bookshelf of every officer who aspires to command his own ship, while those who have attained that ambition may still discover in it new ideas and suggestions wherewith to supplement their own experience.

Naval Customs, Traditions, and Usage. By Lieutenant-Commander Leland P. Lorette, U.S. Navy. (United States Naval Institute, Annapolis, Maryland). \$3.75.

This comprehensive volume is a most interesting treatise on the traditions, customs and laws of the sea, the habits of sailors, and the meaning and origin of certain time-honoured ceremonies. There is also a valuable index of nautical terms and naval expressions.

Although an American publication, the common origin of most of the subjects dealt with should make it no less interesting to British readers. It is profusely illustrated and packed with information which will please and intrigue the student of old navy days and ways.

MILITARY

My Army Life. By Lieut.-General the Earl of Dundonald, K.C.B., K.C.V.O. (Edward Arnold). 7s. 6d.

Lord Dundonald first published his memoirs in 1926, but this reprint is now reviewed for the first time in the JOURNAL.

Born in 1852, Lord Dundonald purchased his commission in the 2nd Life Guards for £1,260, being then 17 years of age. But, although living in that distant and easy-going period, he was not content to let things stagnate around him. In numerous ways, as this autobiography shows, Dundonald was filled with progressive ideas. In the Sudan, where he fought at Abu Klea and Gubat, he learnt a good deal about rifle fire, and his subsequent views on the mobility and handling of cavalry in the South African War show his worth as a soldier. An enthusiast for musketry, and later for machine guns, he never ceased to preach the gospel of "the concentrated essence of infantry."

He next went to Canada, where his attempts at reorganizing the Canadian Militia were foiled through wire-pulling, and not through any lack of vision or originality. His handling of irregulars in South Africa had already shown him to be a popular and far-seeing commander of men.

The most remarkable portion of the memoirs, however, is that dealing with Dundonald's proposal for the employment of smoke screens at sea, and still more on land. The idea had been put to a practical use by his ancestor, Admiral Lord Cochrane, in the Basque Roads, and Lord Dundonald eagerly developed the idea. A discussion with Lord Kitchener in September, 1914, led to no good result; a visit to Admiral Sir Frederick Hamilton was fruitless; while an interview with Sir John French and a tour of the front at Neuve Chapelle left Lord Dundonald more than ever convinced as to the possibility of the useful employment of smoke screens on land. That he was right was shown by subsequent events: much the same sequence of events marked the production of the tank.

Ranging Memories. By Lieut.-Colonel H. F. N. Jourdain, C.M.G., The Connaught Rangers. (University Press, Oxford).

Colonel Jourdain has had a long career in the Connaught Rangers, and in this book he has brought together the reminiscences of his active service from the days spent at Sandhurst down to the disbandment of the regiment on 31st July, 1922. Having a marvellous fund of stories at the tip of his tongue, he has been able to fill some 300 pages with a seemingly endless flow of yarns of every description. Belonging to an Irish regiment and being a faithful disciple of Charles Lever, a master of the picaresque novel, Colonel Jourdain never fails to entertain. In fact, the humorous side of the book rather thrusts its more serious elements into the background. There are a few good pages dealing with the work of the Rangers at Colenso (where the author met Captain H. H. Wilson, the future Field-Marshal, on the field), at Spion Kop and elsewhere. He then relapses into pure anecdotes. But with his tenure of command of the 5th (Service) Battalion of the Rangers in 1915 there comes once more a really good military picture in the shape of a description of that battalion's work at Gallipoli in August, 1915. In 1916 the author

was sent to France, and his tale assumes a more familiar aspect. Finally, after the Armistice, he commanded the 2nd Battalion of the Rangers in Upper Silesia. The story of his experiences in those parts is perhaps the best part of the book, which is calculated to please students of the lighter sides of Army life in the days before the Great War.

A Study of the Strategy and Tactics of the Mesopotamia Campaign, 1914-1917. By A. Kearsey, D.S.O., O.B.E. (Gale & Polden). 5s. 6d.

This volume treats of the Mesopotamian campaign up to and inclusive of the occupation of Baghdad. It is somewhat more detailed than many books of a similar nature and contains a few more critical remarks. It runs to 180 pages of text; there is a reasonable index and no less than four maps. There are useful references to F.S.R. Altogether it marks an advance in these "abbreviated histories," but even so it will need some supplementary reading for the student about to sit for promotion examinations.

Gymnastics With and Without Apparatus. By Captain K. S. Wootten, The Oxfordshire and Buckinghamshire Light Infantry. (Gale & Polden). 5s.

This is a text-book of Army Gymnastics, the greater part of the book being devoted to work with apparatus. Chapters I, II and III deal with the Parallel Bars, Horizontal Bar and Vaulting Horse; Chapter IV is devoted to Groundwork and Tumbling; Chapter V—very short—describes tricks with tables and chairs; while Chapter VI describes all exercises in rope climbing. There are some appendices. The Foreword, by Field-Marshal Sir William Birdwood, and Introduction, by Colonel G. N. Dyer, Inspector of Physical Training, are a guarantee of the value of the book to the expert and non-expert alike.

Lieut.-Colonel Robert Horn, D.S.O., M.C. A sketch. By his mother. For private circulation. (Maclehose). 3s. 6d.

A brief biography of a fine regimental officer. The latter portion consists of extracts from the subject's personal diaries, which are full of intimate details of regimental life in the Great War.

A Muster Roll of the British Non-commissioned Officers and Men present at the Battle of Waterloo. Section I—Cavalry. Compiled by E. Dwelly, F.S.A. (Scot.), F.S.G. Privately printed.

This roll has been compiled from contemporary muster rolls and pay lists.

A Short Record of the Colours of The Queen's Own Royal West Kent Regiment. By Captain H. N. Edwards, The Queen's Own Royal West Kent Regiment. Reprinted from "The Queen's Own Gazette."

This little book, profusely illustrated with photographs of every surviving colour known to have been carried by the Regiment, should be of considerable interest to all who are compiling any record of regimental colours; it is a model for any production of this nature.

Field Service Regulations of the Chinese National Army. Translated by Captain J. V. Davidson-Houston, Royal Engineers, and Lieutenant R. V. Dewar-Durie, Argyle and Sutherland Highlanders. (Henri Vetch, Peiping). 8 (China) dollars.

Although of little interest from a strictly military point of view, this translation,

it is claimed, should prove of great value to all officers having any dealings with Chinese military life and literature. It should also be of great use to Chinese cadets visiting or studying in Europe and the United States. In this respect it fills a long-felt want.

Bautechnischer Luftschutz. By Hans Schoezberger. (Bauwelt-Verlag, Berlin).

This highly technical and well-illustrated volume is addressed to all architects and engineers who may be called upon to design any buildings or shelters which may be subjected to high-explosive or gas attack from the air. It supplies an astounding proof of how seriously the menace of aerial attack is being treated in Germany. The book even considers the best lay-out of a modern city to minimize dangers from the air in every form. There is also much in it that can be applied to the construction of works in the field.

REGIMENTAL HISTORIES

The History of the Somerset Light Infantry (Prince Albert's), 1685-1914.

By Major-General Sir Henry Everett, K.C.M.G., C.B. (Methuen). 20s.

Founded in 1685 by the 7th Earl of Huntingdon, the 13th Foot, or Somerset Light Infantry, had built up a distinguished record of active service long before the outbreak of the Great War. The present volume does justice to the 1st Battalion's activities in many campaigns—at the Battle of the Boyne, through the War of the Spanish Succession, the Seven Years' War, the Peninsula; then in India, where, as the 13th Foot, it maintained the celebrated defence of Jellalabad. In 1858 the 2nd Battalion was raised at Winchester, under its present title; ultimately it fought in the South African War, 1899-1902. The 1st Battalion, after taking part in the Zulu War of 1878-79, went to the East and so missed South Africa.

This handsome volume is filled with valuable details concerning the Army of the past, and is well provided with maps and appendices. It does full justice to a regiment with a fine tradition at its back.

With the Royal Garhwal Rifles in the Great War, from August, 1914, to November, 1917. By D. H. Drake-Brockman, C.M.G., Brigadier-General,

late Commandant, 2nd Battalion. (C. Clarke, Ltd., Haywards Heath). 10s. 6d.

On the outbreak of the Great War the 1st and 2nd Battalions of the 39th Garhwal Rifles were brigaded with the 2nd Leicesters, and went to France in the Meerut Division. They fought at Neuve Chapelle, Aubers and Festubert; then the two battalions were amalgamated owing to the difficulties of finding reinforcements. The joint battalion left France in November, 1915; then served in Egypt for a time before returning to India. During 1917 the unit was despatched to Mesopotamia, and finally proceeded to Salonika. It once more returned to India in 1920, having fought against the Kurds round Mosul.

Merioneth Volunteers and Local Militia during the Napoleonic Wars (1795-1866). By Hugh J. Owen, Clerk of the Peace, etc., of the County of Merioneth. (Hughes Bros., Dolgelly).

Much labour and research has been needed to produce this little volume. These curious little units, formed for local protection, bore such titles as the "Cader Idris Volunteers," "Edeyrrion Volunteers"; they should not be confused with the Militia Regiment of the county of Merioneth.

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